سلسلة كتب الأستاذ

Main Book

Prepared by:
Mohamed Nasreldin

Revised by:
Amr Madany
Attia Ibrahem Assad
Ahmed Nassr

5th Primary

Second Term

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Theme 3

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Adding and Subtracting Fractions

Adding and Subtracting Fractions with Unlike Denominators

Finding Like Denominators Using the LCM

Learning Objectives:

By the end of this lesson, the student will be able to:

- Generate pairs of fractions with like denominators.
- Explain how to find like denominators.

Using Models to Add and Subtract Fractions with Unlike Denominators Adding and Subtracting Fractions with Unlike Denominators

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use models to represent addition and subtraction of fractions with unlike denominators.
- Add and subtract fractions with unlike denominators.
- Use benchmark fractions and number sense of fractions to assess the reasonableness of his/her answers.

Finding Like Denominators Using the LCM

Finding Like Denominators Using the Lowest Common Multiple

1 One equivalent fraction:

Ex. Find the smallest like denominator for the following fractions:

ⓐ $\frac{3}{4}$ and $\frac{5}{8}$

Find the LCM:

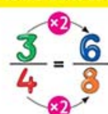
4 = 2 X 2

8 = 2 X 2 X 2

LCM = 2 X 2 X 2 = 8

(Factor trees: 4 → 2, 2; 8 → 2, 4; 4 → 2, 2)

8 is the LCM of the two denominators.



Note: Only one fraction has been changed because 8 is a multiple of 4.

ⓑ $\frac{2}{9}$ and $\frac{2}{3}$

Find the LCM:

3 = 3

9 = 3 X 3

LCM = 3 X 3 = 9

(Factor tree: 9 → 3, 3)

9 is the LCM of the two denominators.

$\frac{2}{9} = \frac{2}{9}$ $\frac{2}{3} \overset{\times 3}{=} \frac{6}{9}$

Note: Only one fraction has been changed because 9 is a multiple of 3.

1 Find the smallest like denominator for the following fractions:

ⓐ $\frac{3}{5}$ and $\frac{7}{10}$ → $\frac{3}{5}$ = ... , $\frac{7}{10}$ = ...

ⓑ $\frac{5}{6}$ and $\frac{2}{3}$ → $\frac{5}{6}$ = ... , $\frac{2}{3}$ = ...

ⓒ $\frac{1}{8}$ and $\frac{1}{2}$ → $\frac{1}{8}$ = ... , $\frac{1}{2}$ = ...

ⓓ $\frac{3}{4}$ and $\frac{1}{12}$ → $\frac{3}{4}$ = ... , $\frac{1}{12}$ = ...

2 Two equivalent fractions:

Ex. Find the smallest like denominator for the following fractions:

ⓐ $\frac{5}{6}$ and $\frac{3}{4}$

Find the LCM:

4 = 2 X 2

6 = 2 X 3

LCM = 2 X 2 X 3 = 12

(4 → 2, 2 ; 6 → 2, 3)

12 is the LCM of the two denominators.

$\frac{5}{6} = \frac{10}{12}$ (×2) $\frac{3}{4} = \frac{9}{12}$ (×3)

Note:

Both fractions have been changed because 12 is the lowest common multiple of the two numbers 4 and 6.

ⓑ $\frac{2}{3}$ and $\frac{3}{5}$

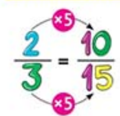
Find the LCM:

3 = 3

5 = 5

LCM = 3 X 5 = 15

15 is the LCM of the two denominators.



$\frac{3}{5} = \frac{9}{15}$ (×3)

Note:

If the two denominators are prime numbers, LCM is the product of them.

2 Find the smallest like denominator for the following fractions:

ⓐ $\frac{8}{15}$ and $\frac{7}{10}$ → $\frac{8}{15} = \frac{\dots}{\dots}$, $\frac{7}{10} = \frac{\dots}{\dots}$

ⓑ $\frac{5}{6}$ and $\frac{1}{4}$ → $\frac{5}{6} = \frac{\dots}{\dots}$, $\frac{1}{4} = \frac{\dots}{\dots}$

ⓒ $\frac{3}{4}$ and $\frac{1}{3}$ → $\frac{3}{4} = \frac{\dots}{\dots}$, $\frac{1}{3} = \frac{\dots}{\dots}$

ⓓ $\frac{5}{14}$ and $\frac{8}{21}$ → $\frac{5}{14} = \frac{\dots}{\dots}$, $\frac{8}{21} = \frac{\dots}{\dots}$

ⓔ $\frac{5}{12}$ and $\frac{2}{9}$ → $\frac{5}{12} = \frac{\dots}{\dots}$, $\frac{2}{9} = \frac{\dots}{\dots}$

3 Aya and Duha are planting flowers in their garden. Aya has enough flowers to grow $\frac{2}{3}$ of her garden. Duha will plant flowers in $\frac{3}{5}$ of her garden, and they both want to write their fractions with a like denominator. Write both fractions with a like denominator.

....

....

$\frac{\quad}{10}$

1 Choose the correct answer:

a) The common denominator of the two fractions $\frac{3}{5}$ and $\frac{1}{2}$ is ....

(2 or 5 or 12 or 10)

b) 8 is a common denominator of the two fractions ....

($\frac{1}{2}$ and $\frac{1}{3}$ or $\frac{1}{3}$ and $\frac{1}{4}$ or $\frac{1}{2}$ and $\frac{1}{4}$ or $\frac{1}{2}$ and $\frac{5}{8}$)

c) The LCM for the two numbers 3 and 6 is .... (6 or 3 or 9 or 12)

d) The common denominator for $\frac{3}{4}$ and $\frac{5}{6}$ is ....(6 or 8 or 12 or 3)

2 Complete the following:

a) The LCM for any two prime numbers is their ....

b) $\frac{5}{8} = \frac{\cdots}{24}$

c) $\frac{1}{3}$ and $\frac{3}{\cdots}$ will be $\frac{\cdots}{12}$ and $\frac{9}{12}$. (With a like denominator)

d) $\frac{7}{8}$ and $\frac{5}{12}$ will be $\frac{\cdots}{\cdots}$ and $\frac{\cdots}{\cdots}$. (With a like denominator)

3 Ganna read $\frac{1}{4}$ of her story, and Sara read $\frac{1}{2}$ of her story.

Write the two fractions with a like denominator.

....

Using Models to Add and Subtract Fractions With Unlike Denominators
Adding and Subtracting Fractions With Unlike Denominators

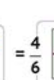
1 Adding and Subtracting Fractions With Unlike Denominators Using Models:

ⓐ **Add:** $\frac{2}{3} + \frac{1}{2}$

Represent both fractions using models.

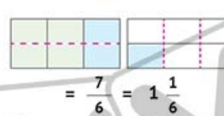
$\frac{2}{3}$ + $\frac{1}{2}$

Give both fractions a like denominator.



$= \frac{4}{6} + \frac{3}{6}$

Add using the models.



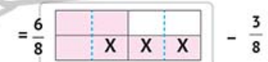
$= \frac{7}{6} = 1\frac{1}{6}$

ⓑ **Subtract:** $\frac{3}{4} - \frac{3}{8}$

Represent the largest (first) fraction using models.

$\frac{3}{4} - \frac{3}{8}$

Give both fractions a like denominator.



$= \frac{6}{8} - \frac{3}{8}$

Subtract using the models.

$= \frac{3}{8}$

Theme 3

1 Find the result using the following models:

a) $\frac{1}{3} + \frac{1}{6} =$ ....

b) $\frac{3}{10} - \frac{1}{5} =$ ....

c) $\frac{3}{4} + \frac{1}{3} =$ ....

d) $\frac{4}{5} - \frac{1}{2} =$ ....

2 Adding and Subtracting Fractions With Unlike Denominators Using the LCM:

Solution steps:

1. Find the LCM for the denominators.
2. Replace these fractions with equivalent fractions with a like denominator.
3. Add or subtract, putting the answer in its simplest form if possible.

Ex. a) Add: $\frac{3}{8} + \frac{1}{6}$

$$\frac{3}{8} + \frac{1}{6} = \frac{9}{24} + \frac{4}{24}$$

$$= \frac{13}{24}$$

Note that

The LCM for **6** and **8** is **24.**

So, $\frac{3}{8} = \frac{9}{24}$, $\frac{1}{6} = \frac{4}{24}$

ⓑ **Add:** $\frac{3}{7} + \frac{1}{3}$

$$\frac{3}{7} + \frac{1}{3} = \frac{9}{21} + \frac{7}{21}$$

$$= \frac{16}{21}$$

Note that

The LCM for **7** and **3** is **21.**

So, $\frac{3}{7} = \frac{9}{21}$, $\frac{1}{3} = \frac{7}{21}$

ⓒ **Subtract:** $\frac{4}{9} - \frac{1}{3}$

$$\frac{4}{9} - \frac{1}{3} = \frac{4}{9} - \frac{3}{9}$$

$$= \frac{1}{9}$$

Note that

The LCM for **3** and **9** is **9.**

So, $\frac{4}{9} = \frac{4}{9}$, $\frac{1}{3} = \frac{3}{9}$

ⓓ **Subtract:** $\frac{3}{4} - \frac{1}{3}$

$$\frac{3}{4} - \frac{1}{3} = \frac{9}{12} - \frac{4}{12}$$

$$= \frac{5}{12}$$

Note that

The LCM for **4** and **3** is **12.**

So, $\frac{3}{4} = \frac{9}{12}$, $\frac{1}{3} = \frac{4}{12}$

2 Find the result:

ⓐ $\frac{3}{4} + \frac{5}{12}$ = ... + ... = ...

ⓑ $\frac{7}{9} - \frac{1}{3}$ = ... – .... = ...

Theme 3

c) $\frac{3}{8} + \frac{5}{6}$ = ... + ... = ...

d) $\frac{8}{9} - \frac{1}{2}$ = ... - .... = ...

e) $\frac{1}{5} + \frac{1}{3}$ = ... + ... = ...

f) $\frac{2}{3} - \frac{1}{4}$ = ... - .... = ...

Quiz

$\frac{\quad}{10}$

1 Use the following models to complete:

a) [model] + [model] = [model]

$\frac{\cdots}{\cdots}$ + $\frac{\cdots}{\cdots}$ = $\frac{\cdots}{\cdots}$

b) [model: X X X]

$\frac{\cdots}{\cdots}$ - $\frac{\cdots}{\cdots}$ = $\frac{\cdots}{\cdots}$

2 Find:

a) $\frac{1}{2} + \frac{2}{5}$ = ...

b) $\frac{3}{4} - \frac{5}{8}$ = ...

c) $\frac{1}{3} + \frac{1}{8}$ = ...

d) $\frac{5}{12} - \frac{1}{4}$ = ...

Unit 8 Adding and Subtracting Mixed Numbers

Concept 8.1 Working with Mixed Numbers

Lesson 1 Adding and Subtracting Mixed Numbers with Like Denominators

Learning Objective:

By the end of this lesson, the student will be able to:

- Add and subtract mixed numbers with like denominators.

Lesson 2 Finding Like Denominators of the Mixed Numbers

Learning Objectives:

By the end of this lesson, the student will be able to:

- Generate pairs of mixed numbers with like denominators.
- Explain how to find like denominators for mixed numbers.

Adding and Subtracting Mixed Numbers with Like Denominators

Remember

Improper faction → Mixed number

$4 \times 2 + 1 = 9$

$2\frac{1}{4} = \frac{9}{4}$

Mixed number → Improper faction

$19 \div 5 = 3$ R 4

$\frac{19}{5} = 3\frac{4}{5}$

The same denominator without change

Rewriting mixed numbers in equivalent forms

Ex.

$\frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{4}{5}$

$3\frac{4}{5} = 2\frac{9}{5}$

$\frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{4}{5}$

$3\frac{4}{5} = 1\frac{14}{5}$

So, $3\frac{4}{5} = 2\frac{9}{5} = 1\frac{14}{5} = \frac{19}{5}$

Ex.

$\frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{1}{7}$

$4\frac{1}{7} = 3\frac{8}{7}$

$\frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{1}{7}$

$4\frac{1}{7} = 2\frac{15}{7}$

$\frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{1}{7}$

$4\frac{1}{7} = 1\frac{22}{7}$

So, $4\frac{1}{7} = 3\frac{8}{7} = 2\frac{15}{7} = 1\frac{22}{7} = \frac{29}{7}$

1 **Complete the following:**

ⓐ $3\frac{4}{5} = \frac{\cdots}{\cdots}$ ⓑ $2\frac{3}{7} = \frac{\cdots}{\cdots}$ ⓒ $1\frac{2}{9} = \frac{\cdots}{\cdots}$ ⓓ $7\frac{1}{2} = \frac{\cdots}{\cdots}$

ⓔ $\frac{11}{2} = \cdots \frac{\cdots}{\cdots}$ ⓕ $\frac{12}{7} = \cdots \frac{\cdots}{\cdots}$ ⓖ $\frac{13}{5} = \cdots \frac{\cdots}{\cdots}$ ⓗ $\frac{16}{3} = \cdots \frac{\cdots}{\cdots}$

2 **Rewrite the given values in two other forms:**

ⓐ $\frac{15}{7} = \cdots \frac{\cdots}{\cdots} = \cdots \frac{\cdots}{\cdots}$ ⓑ $\frac{28}{7} = \cdots \frac{\cdots}{\cdots} = \cdots \frac{\cdots}{\cdots}$

ⓒ $3\frac{1}{5} = \cdots \frac{\cdots}{\cdots} = \cdots \frac{\cdots}{\cdots}$ ⓓ $\frac{13}{5} = \cdots \frac{\cdots}{\cdots} = \cdots \frac{\cdots}{\cdots}$

Adding and Subtracting Mixed Numbers with Like Denominators

1 Using Improper Fractions:

Solution Steps:

1. Convert mixed numbers into improper fractions.
2. Perform addition or subtraction.
3. Convert an improper fraction (the result) into a mixed number in its simplest form.

Ex.

ⓐ $3\frac{1}{5} + 1\frac{3}{5} = \frac{16}{5} + \frac{8}{5} = \frac{24}{5} = 4\frac{4}{5}$

Simplest form

ⓑ $4\frac{1}{5} - 2\frac{4}{5} = \frac{21}{5} - \frac{14}{5} = \frac{7}{5} = 1\frac{2}{5}$

2 By Decomposing Mixed Numbers:

Solution Steps:

1. Add/subtract the fraction.
2. Add/subtract whole numbers.
3. Put the result in the simplest form (Regrouping mixed numbers).

Ex.

a) $1\frac{3}{5} + 2\frac{4}{5} = 3\frac{7}{5} = 4\frac{2}{5}$

$1 + 2$ $\quad \frac{3}{5} + \frac{4}{5}$ $\quad 3\frac{7}{5} = 3 + \frac{5}{5} + \frac{2}{5}$

b) $4\frac{5}{8} - 2\frac{3}{8} = 2\frac{2}{8} = 2\frac{1}{4}$

$4 - 2$ $\quad \frac{5}{8} - \frac{3}{8}$ $\quad \frac{2}{8} = \frac{1}{4}$

c) $7\frac{1}{3} - 2\frac{2}{3} = 6\frac{4}{3} - 2\frac{2}{3} = 4\frac{2}{3}$

$7\frac{1}{3} = 6 + \frac{3}{3} + \frac{1}{3}$

$\frac{1}{3} - \frac{2}{3}$ can't be.
So, we regroup the minuend.

3 Find the result using the strategy you prefer, and simplify if possible:

a) $2\frac{5}{6} + 6\frac{5}{6} =$ ....

b) $4\frac{1}{4} + 7\frac{3}{4} =$ ....

c) $3\frac{4}{5} + 1\frac{3}{5} =$ ....

d) $5\frac{7}{8} + 2\frac{5}{8} =$ ....

e) $3\frac{7}{9} + 1\frac{4}{9} =$ ....

f) $6\frac{4}{5} + 2\frac{1}{5} =$ ....

g) $7\frac{1}{6} - 2\frac{5}{6} =$ ....

h) $6\frac{2}{7} - 5\frac{4}{7} =$ ....

Finding the Unknown in Addition and Subtraction Problems

a) $1\frac{1}{2} + a = 3\frac{3}{4}$ → $a = 3\frac{3}{4} - 1\frac{1}{2} = 3\frac{3}{4} - 1\frac{2}{4} = 2\frac{1}{4}$

b) $b + 3\frac{1}{3} = 5\frac{5}{6}$ → $b = 5\frac{5}{6} - 3\frac{1}{3} = 5\frac{5}{6} - 3\frac{2}{6} = 2\frac{3}{6} = 2\frac{1}{2}$

c) $7\frac{4}{5} - c = 1\frac{1}{2}$ → $c = 7\frac{4}{5} - 1\frac{1}{2} = 7\frac{8}{10} - 1\frac{5}{10} = 6\frac{3}{10}$

d) $d - 6\frac{3}{9} = 8\frac{2}{3}$ → $d = 6\frac{3}{9} + 8\frac{2}{3} = 6\frac{3}{9} + 8\frac{6}{9} = 14\frac{9}{9} = 15$

4 Choose from the given values to solve each equation:

$(1\frac{3}{8}\ ,\ 1\frac{2}{3}\ ,\ \frac{2}{3}\ ,\ 1\frac{2}{3}\ ,\ 2\frac{2}{5}\ ,\ 5\frac{2}{4}\ ,\ 6\frac{2}{4})$

a) $3\frac{1}{5} +$ .... $= 5\frac{3}{5}$

b) .... $+ 4\frac{2}{3} = 5\frac{1}{3}$

c) $2\frac{4}{8} -$ .... $= 1\frac{1}{8}$

d) .... $+ 1\frac{3}{4} = 7\frac{1}{4}$

5 Find the value «χ»:

a) $1\frac{1}{8} + \chi = 7\frac{5}{8}$ ⟶ χ = ...

b) $\chi + 1\frac{3}{4} = 5$ ⟶ χ = ...

c) $5\frac{4}{5} - \chi = 3\frac{1}{5}$ ⟶ χ = ...

d) $\chi - 4\frac{2}{3} = 1\frac{2}{3}$ ⟶ χ = ...

$\frac{\quad}{10}$

1 Choose the correct answer:

a) $2\frac{1}{7}$ = ... + ... + ...

($\frac{7}{7} + \frac{4}{7} + \frac{4}{7}$ or $\frac{1}{7} + \frac{1}{7} + \frac{1}{7}$ or $\frac{4}{4} + \frac{4}{4} + \frac{1}{7}$ or $\frac{2}{7} + \frac{1}{7}$)

b) $3\frac{1}{5} + 2\frac{1}{5}$ = ... ($5\frac{1}{3}$ or $3\frac{2}{5}$ or $5\frac{2}{5}$ or $2\frac{3}{5}$)

c) $7\frac{4}{5} - 3\frac{1}{5}$ = ... (4 or $4\frac{3}{5}$ or $4\frac{5}{7}$ or 11)

2 Complete the following:

a) $3\frac{4}{5}$ = ... (As an improper faction)

b) $\frac{18}{7}$ = ... (As a mixed number)

c) $3\frac{2}{9} + 4\frac{3}{9}$ = ...

3 Find the value of «χ»:

$\chi - 3\frac{1}{5} = 5$, then χ = ...

Finding Like Denominators of the Mixed Numbers

First way Find the Like Denominator Directly:

Ex. Rewrite the given mixed numbers with like denominators:

Note Whole number doesn't change.

ⓐ $2\frac{3}{8}$ and $3\frac{1}{6}$

$2\frac{3}{8} = 2\frac{9}{24}$ (×3) and $3\frac{1}{6} = 3\frac{4}{24}$ (×4)

Find LCM

8 = 2 X 2 X 2

6 = 2 X 3

LCM = 2 X 2 X 2 X 3 = 24

24 is the LCM of the two denominators.

ⓑ $6\frac{5}{12}$ and $1\frac{3}{4}$

$6\frac{5}{12} = 6\frac{5}{12}$ and $1\frac{3}{4} = 1\frac{9}{12}$ (×3)

Find LCM

4 = 2 X 2

12 = 2 X 2 X 3

LCM = 2 X 2 X 3 = 12

12 is the LCM of the two denominators.

1 Rewrite the given mixed numbers with like denominators:

ⓐ $1\frac{1}{5}$, $1\frac{3}{4}$

$1\frac{1}{5}$ = ... $\frac{\cdots}{\cdots}$, $1\frac{3}{4}$ = ... $\frac{\cdots}{\cdots}$

Find LCM

...... = ...

...... = ...

LCM = ...

ⓑ $2\frac{5}{12}$, $3\frac{6}{8}$

$2\frac{5}{12}$ = ... $\frac{\cdots}{\cdots}$, $3\frac{6}{8}$ = ... $\frac{\cdots}{\cdots}$

Find LCM

...... = ...

...... = ...

LCM = ...

Theme 3

c $2\frac{13}{24}$, $2\frac{7}{18}$

$2\frac{13}{24}$ = ... $\frac{....}{....}$, $2\frac{7}{18}$ = ... $\frac{....}{....}$

Find LCM

..... = ...

..... = ...

LCM = ...

d $1\frac{15}{24}$, $3\frac{12}{16}$

$1\frac{15}{24}$ = ... $\frac{....}{....}$, $3\frac{12}{16}$ = ... $\frac{....}{....}$

Find LCM

..... = ...

..... = ...

LCM = ...

Second way Put the Mixed Numbers in their Simplest Forms First:

Ex. Rewrite the given mixed numbers with like denominators:

a $8\frac{6}{12}$ and $3\frac{5}{15}$

6 is the LCM of the two denominators.

$8\frac{6}{12} = 8\frac{1}{2} = 8\frac{3}{6}$ (×3) and $3\frac{5}{15} = 3\frac{1}{3} = 3\frac{2}{6}$ (×2)

b $1\frac{9}{12}$ and $5\frac{3}{18}$

12 is the LCM of the two denominators.

$1\frac{9}{12} = 1\frac{3}{4} = 1\frac{9}{12}$ (×3) and $5\frac{3}{18} = 5\frac{1}{6} = 5\frac{2}{12}$ (×2)

2 Rewrite the given mixed numbers with like denominators:

a $1\frac{3}{15}$, $1\frac{3}{4}$

$1\frac{3}{15}$ = ... , $1\frac{3}{4}$ = ...

.... is the LCM of the two denominators.

ⓑ $2\frac{8}{12}$, $3\frac{6}{8}$

...... $\frac{......}{......}$ = ... , ... $\frac{......}{......}$ = ...

...... is the LCM of the two denominators.

ⓒ $2\frac{14}{24}$, $2\frac{9}{18}$

...... $\frac{......}{......}$ = ... , ... $\frac{......}{......}$ = ...

...... is the LCM of the two denominators.

ⓓ $1\frac{15}{24}$, $3\frac{12}{16}$

...... $\frac{......}{......}$ = ... , ... $\frac{......}{......}$ = ...

...... is the LCM of the two denominators.

Note that putting a fraction in its simplest form always makes it easier to find the common denominator.

$\frac{}{10}$

1 Choose the correct answer:

ⓐ $2\frac{5}{10} = 2\frac{......}{2}$ (1 or 5 or 10 or 25)

ⓑ $5\frac{3}{7} = 5\frac{9}{......}$ (3 or 7 or 21 or 9)

ⓒ The LCM of 7 and 5 is .... (15 or 21 or 35 or 12)

2 Complete the following:

ⓐ $\frac{12}{18}$ = ... (In the simplest form)

ⓑ $4\frac{2}{9} = 4\frac{......}{18}$

ⓒ The common denominator for $\frac{2}{6}$ and $\frac{3}{7}$ is ....

3 Rewrite the given mixed numbers with like denominators:

$4\frac{2}{9}$ and $5\frac{1}{6}$

$4\frac{2}{9}$ = ... $\frac{......}{......}$ and $5\frac{1}{6}$ = ... $\frac{......}{......}$

Unit 8

Adding and Subtracting Mixed Numbers

8.2 Adding and Subtracting Mixed Numbers with Unlike Denominators

Lesson 3 Using Models to Add and Subtract Mixed Numbers

Learning Objective:

By the end of this lesson, the student will be able to:

- Use models to represent addition and subtraction of mixed numbers with unlike denominators.

Lessons 4&5 Adding and Subtracting Mixed Numbers

Learning Objective:

By the end of these lessons, the student will be able to:

- Add and subtract fractions and mixed numbers with unlike denominators.

Lesson 6 Story Problems with Mixed Numbers

Learning Objective:

By the end of this lesson, the student will be able to:

- Solve story problems involving addition and subtraction of fractions and mixed numbers.

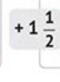
Using Models to Add and Subtract Mixed Numbers

Using Models to Add Mixed Numbers with Unlike Denominators

Ex. Add: $2\frac{2}{5} + 1\frac{1}{2}$

Represent each mixed number using models.

$2\frac{2}{5}$

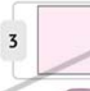
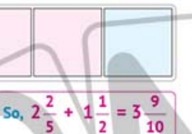


$+1\frac{1}{2}$

Divide the mixed numbers model by the same number of parts.

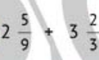
$2\frac{4}{10}$ $+1\frac{5}{10}$

Then add

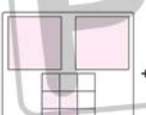


3

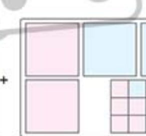
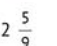
$\frac{9}{10}$

So, $2\frac{2}{5} + 1\frac{1}{2} = 3\frac{9}{10}$



Ex. Add: $2\frac{5}{9} + 3\frac{2}{3}$



$2\frac{5}{9} + 3\frac{2}{3} = 6\frac{2}{9}$

1 **Use the following models to find:**

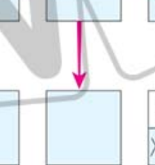
ⓐ $2\frac{3}{4} + 1\frac{1}{3}$ = ...

ⓑ $4\frac{1}{3} + \frac{1}{2}$ = ...

Using Models to Subtract Mixed Numbers with Unlike Denominators

Ex. **Subtract:** $3\frac{1}{2} - 1\frac{2}{5}$

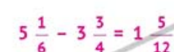
Represent the greatest (first) mixed number using models.



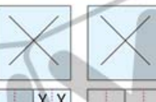
Divide the mixed numbers models by the same number of parts.

Then subtract $3\frac{1}{2} - 1\frac{2}{5} = 2\frac{1}{10}$

Ex. **Subtract:** $5\frac{1}{6} - 3\frac{3}{4}$



$5\frac{1}{6} - 3\frac{3}{4} = 1\frac{5}{12}$



2 **Use the following models to find:**

ⓐ $4\frac{1}{2} - 2\frac{1}{8}$ = ...

ⓑ $3\frac{1}{5} - 1\frac{1}{2}$ = ...

Using Number Lines to Subtract Mixed Numbers

Start with the smallest number, and then move up the number line to reach the greatest number, the distance between the smallest and the greatest numbers is the result of the subtraction.

Ex. **Subtract:** $5\frac{1}{4} - 3\frac{1}{6}$

Start with: $3\frac{1}{6}$, then move up the number line to 4, then 5, and finally to $5\frac{1}{4}$.

$5\frac{1}{4} - 3\frac{1}{6} = \frac{5}{6} + 1 + \frac{1}{4} = \frac{10}{12} + 1 + \frac{3}{12} = 1 + \frac{13}{12} = 1 + 1 + \frac{1}{12} = 2\frac{1}{12}$

3 Use the following number lines to subtract:

a) $6\frac{1}{3} - 3\frac{4}{5}$ = ...

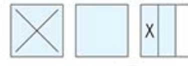
b) $2\frac{7}{8} - 1\frac{1}{2}$ = ...

c) $9\frac{1}{4} - 8\frac{3}{5}$ = ...

$\frac{}{10}$

1 Choose the correct answer:

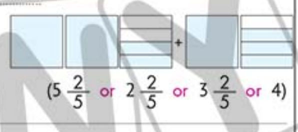
a) The opposite model represents ....



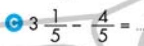
($\frac{7}{7} - 1\frac{1}{3}$ or $1\frac{1}{3} + \frac{1}{3}$ or $2\frac{2}{3} - 1$ or $2\frac{2}{3} - 1\frac{1}{3}$)

b) The opposite model represents ....

($3\frac{2}{4}$ or 3 or $4\frac{1}{4}$ or 5)



c) $3\frac{1}{5} - \frac{4}{5}$ = ...



($5\frac{2}{5}$ or $2\frac{2}{5}$ or $3\frac{2}{5}$ or 4)

2 Complete the following:

a) $3\frac{2}{5} + 4\frac{1}{5}$ = ...

b) $4\frac{7}{8} - 1\frac{1}{2}$ = ...

c) $4\frac{2}{7} - 3\frac{5}{7}$ = ...

3 Use the following model to find the sum:

• $2\frac{2}{5}$ + $\frac{3}{5}$ = ...

Adding and Subtracting Mixed Numbers

Strategies of Adding and Subtracting Mixed Numbers

1 Convert Mixed Numbers Into Improper Fractions then Add/Subtract:

ⓐ

Mixed numbers		Improper fractions		Like denominator		Adding, then simplifying
$1\frac{3}{4} + 2\frac{1}{3}$	=	$\frac{7}{4} + \frac{7}{3}$	=	$\frac{21}{12} + \frac{28}{12}$	=	$\frac{49}{12} = 4\frac{1}{12}$

ⓑ

Mixed numbers		Improper fractions		Like denominator		Subtractacting, then simplifying
$6\frac{1}{3} - 2\frac{1}{2}$	=	$\frac{19}{3} - \frac{5}{2}$	=	$\frac{38}{6} - \frac{15}{6}$	=	$\frac{23}{6} = 3\frac{5}{6}$

2 Add /Subtract then Decompose Mixed Numbers

ⓐ

Mixed numbers		Like denominator		Adding		Simplifying
$1\frac{3}{4} + 2\frac{1}{3}$	=	$1\frac{9}{12} + 2\frac{4}{12}$	=	$3\frac{13}{12}$	=	$4\frac{1}{12}$

ⓑ

Mixed numbers		Like denominator		Decompose		Subtractacting
$6\frac{1}{3} - 2\frac{1}{2}$	=	$6\frac{2}{6} - 2\frac{3}{6}$	=	$5\frac{8}{6} - 2\frac{3}{6}$	=	$3\frac{5}{6}$

1 Find the result of each of the following using two different strategies:

ⓐ $4\frac{3}{5} - 2\frac{1}{3}$

1 ....

2 ....

b $8\frac{1}{2} - 2\frac{3}{7}$

1 ....

2 ....

c $7\frac{1}{2} - 2\frac{7}{8}$

1 ....

2 ....

d $5\frac{7}{9} + 2\frac{2}{3}$

1 ....

2 ....

e $9\frac{1}{6} + 3\frac{1}{3}$

1 ....

2 ....

f $1\frac{2}{3} + 2\frac{2}{5}$

1 ....

2 ....

2 Find the missing numbers:

a $a + 5\frac{5}{6} = 9\frac{1}{12}$ → a = ...

b $8\frac{7}{10} - b = 4\frac{9}{20}$ → b = ...

c $c - 1\frac{3}{4} = 7\frac{3}{44}$ → c = ...

d $6\frac{7}{15} + d = 13\frac{3}{10}$ → d = ...

Adjusting the Mixed Number (Give and Take Strategy):

First: Addition

- Determine which mixed number is closest to being a whole number.
- Decompose the other number into two parts, one of which completes this mixed number to be a whole number.
- Take this part and give it to the other to make it a whole number.

Ex.

1. $3\frac{7}{8} + \frac{1}{4} = 3\frac{7}{8} + \frac{2}{8}$

   $= 3\frac{7}{8} + \frac{1}{8} + \frac{1}{8}$

   $= 4 + \frac{1}{8} = 4\frac{1}{8}$

2. $2\frac{1}{2} + 1\frac{5}{6} = 3\frac{3}{6} + 1\frac{5}{6}$

   $= 2\frac{2}{6} + \frac{1}{6} + 1\frac{5}{6}$

   $= 2\frac{2}{6} + 2 = 4\frac{2}{6} = 4\frac{1}{3}$

Second: Subtraction

- Always make the subtrahend a whole number.
- Give both numbers the same fraction that makes the subtrahend a whole number, then perform the subtraction.

Ex.

1. $6\frac{1}{8} - 3\frac{3}{4} = 6\frac{1}{8} - 3\frac{6}{8}$

   $= (6\frac{1}{8} + \frac{2}{8}) - (3\frac{6}{8} + \frac{2}{8})$

   $= 6\frac{3}{8} - 4 = 2\frac{3}{8}$

2. $5\frac{5}{6} - 2\frac{1}{4} = 5\frac{10}{12} - 2\frac{3}{12}$

   $= (5\frac{10}{12} + \frac{9}{12}) - (2\frac{3}{12} + \frac{9}{12})$

   $= 6\frac{7}{12} - 3 = 3\frac{7}{12}$

3 Complete:

ⓐ $3\frac{1}{3} + 1\frac{5}{6}$ = ... + ... = ... + $\frac{1}{6}$ + $1\frac{5}{6}$ = ... + 2 = ...

ⓑ $4\frac{8}{9} + 1\frac{1}{3}$ = ... + ... = ... + $\frac{1}{9}$ + ... = 5 + ... = ...

ⓒ $4\frac{1}{8} - 2\frac{7}{8}$ = (........ + ...) − (........ + ...) = ... − 3 = ...

ⓓ $8\frac{1}{5} - 7\frac{9}{10}$ = (........ + ...) − (........ + ...) = ... − .... = ...

$\frac{\quad}{10}$

1 Choose the correct answer:

ⓐ $6\frac{2}{5}$ .... ($\frac{30}{5}$ or $\frac{32}{5}$ or $\frac{10}{6}$ or $\frac{8}{5}$)

ⓑ $4\frac{2}{6} + 3\frac{4}{6}$ = ... (1 or $3\frac{1}{6}$ or $2\frac{3}{6}$ or 8)

ⓒ .... − $1\frac{3}{4}$ = $1\frac{2}{8}$ (3 or $2\frac{1}{4}$ or $2\frac{6}{6}$ or 2)

2 Complete the following:

ⓐ If $x + 1\frac{3}{5} = 3\frac{4}{5}$, then x = ...

ⓑ If $4\frac{2}{3} + y = 6\frac{7}{9}$, then y = ...

ⓒ $3\frac{3}{4} = \frac{4}{4} + \frac{3}{4} +$ ....

3 Find:

- $6\frac{2}{8} - 2\frac{3}{4}$ = ...

Story Problems with Mixed Numbers

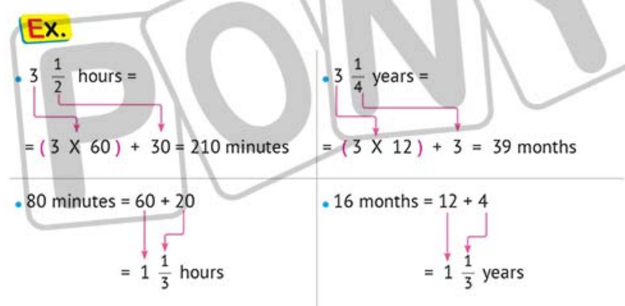
Remember

Minute → Seconds: X 12; Seconds → Minute: ÷ 12

Minute → Seconds: X 60; Seconds → Minute: ÷ 60

Minute → Seconds: X 60; Seconds → Minute: ÷ 60

1 year = 12 months	1 hour = 60 minutes	1 minute = 60 seconds
$\frac{1}{2}$ year = 6 months	$\frac{1}{2}$ hour = 30 minutes	$\frac{1}{2}$ minute = 30 seconds
$\frac{1}{3}$ year = 4 months	$\frac{1}{3}$ hour = 20 minutes	$\frac{1}{3}$ minute = 20 seconds
$\frac{1}{4}$ year = 3 months	$\frac{1}{4}$ hour = 15 minutes	$\frac{1}{4}$ minute = 15 seconds
	$\frac{1}{10}$ hour = 6 minutes	$\frac{1}{10}$ minute = 6 seconds
1 month = $\frac{1}{12}$ year	1 minute = $\frac{1}{60}$ hour	1 second = $\frac{1}{60}$ minute



1 Complete:

a) $7\frac{1}{10}$ minutes = (.......... X ....) + ... = ... seconds

b) $4\frac{3}{4}$ hours = (.......... X ....) + ... = ... minutes

c) $6\frac{1}{2}$ years = (.......... X ....) + ... = ... months

d) 3 minutes + 45 seconds = ... minutes

e) An hour + 20 minutes = ... hours

f) 4 years + 6 months = ... years

g) $2\frac{1}{3}$ hours = ... + ... = ... minutes

h) $1\frac{1}{2}$ years = ... + ... = ... months

i) 150 seconds = ... + ... = ... minutes

j) 40 months = ... + ... = ... years

2

A ship traveling up the Nile takes $6\frac{1}{6}$ hours to reach its destination. On the way back, the current helps push the ship along, so it takes 30 fewer minutes for the return trip. How long is the ship's trip up and down the Nile? Give your answer both as a mixed number and in hours and minutes.

....

....

....

....

3 Abeer is mixing juice for a celebration. She mixes $5\frac{3}{4}$ liters of fruit juice concentrate with $1\frac{1}{2}$ liters more water than fruit juice concentrate. She needs 12 L of the mixture for the celebration. Does she have enough? Why or why not? Explain.

....

....

....

$\frac{\quad}{10}$

1 Choose the correct answer:

ⓐ $2\frac{1}{2}$ year = ... months (30 or 24 or 32 or 25)

ⓑ 90 minutes = ... hours ($1\frac{1}{2}$ or $1\frac{1}{3}$ or $2\frac{1}{4}$ or $2\frac{1}{2}$)

ⓒ 180 Seconds = ... minutes (2 or 3 or 4 or 5)

2 Complete the following:

ⓐ 2 hours + 20 minutes = ... hours

ⓑ 36 months = ... years

ⓒ 4 minutes + 20 seconds = ... minutes

3 Manal studied math for two hours and science for 40 minutes. How long did she spend studying in hours ?

....

Multiplying and Dividing Fractions

Multiplying Fractions and Mixed Numbers

Lesson 1 Multiplying a Fraction or Mixed Number by a Whole Number

Learning Objective:

By the end of this lesson, the student will be able to:

- Multiply a fraction or a mixed number by a whole number.

Lessons 2&3 Multiplying Fractions Using Models Multiplying Fractions by Fractions

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use models to represent multiplication of a fraction by a fraction.
- Multiply a fraction by a fraction.
- Simplify fractions.

Lessons 4&5 Multiplying Fractions and Mixed Numbers Multiplying Mixed Numbers Using Improper Fractions.

Learning Objectives:

By the end of these lessons, the student will be able to:

- Multiply a fraction by a mixed number.
- Simplify fractions and mixed numbers.

Lesson 6 Story Problems Involving Multiplication of Fractions and Mixed Numbers

Learning Objectives:

By the end of this lesson, the student will be able to:

- Solve story problems involving multiplication of fractions and mixed numbers.
- Simplify fractions and mixed numbers.

Multiplying a Fraction or Mixed Number by a Whole Number

Strategies of Multiplying a Fraction by a Whole Number

1 Using Repeated Addition:

Ex. Multiply:

ⓐ $4 \times \frac{2}{3} = \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$

ⓑ $1\frac{1}{2} \times 3 = 1\frac{1}{2} + 1\frac{1}{2} + 1\frac{1}{2} = 4\frac{1}{2}$

1 Complete the following (Write the result in its simplest form):

ⓐ $2 \times \frac{3}{5}$ = ... + ... = ...

ⓑ $\frac{5}{6} \times 6$ = ... + ... + ... + ... + ... + ... = ...

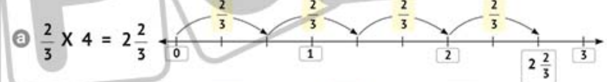
ⓒ $2\frac{1}{4} \times 5$ = ... + ... + ... + ... + ... = ...

ⓓ $4 \times 5\frac{1}{2}$ = ... + ... + ... + ... = ...

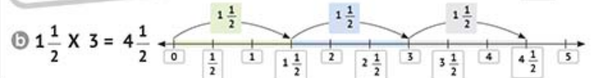
2 Drawing a Number Line:

Ex. Multiply:

ⓐ $\frac{2}{3} \times 4 = 2\frac{2}{3}$



ⓑ $1\frac{1}{2} \times 3 = 4\frac{1}{2}$



2 Multiply using the number line:

ⓐ $2 \times \frac{3}{5} =$ ....

0 — 1 — 2

ⓑ $\frac{1}{2} \times 4 =$ ....

0 — 1 — 2 — 3

ⓒ $2\frac{1}{4} \times 2 =$ ....

0 — 1 — 2 — 3 — 4 — 5

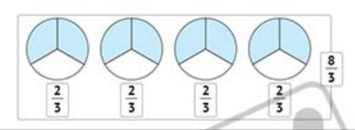
ⓓ $3 \times 1\frac{1}{2} =$ ....

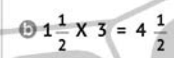
0 — 1 — 2 — 3 — 4 — 5

3 Drawing a Diagram:

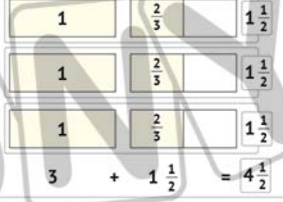
Ex. Multiply:

ⓐ $\frac{2}{3} \times 4 = \frac{8}{3} = 2\ \frac{2}{3}$

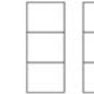


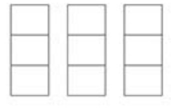


ⓑ $1\frac{1}{2} \times 3 = 4\ \frac{1}{2}$



3 Multiply using the following models:





ⓐ $3 \times \frac{4}{5} =$ ....

ⓑ $\frac{2}{3} \times 5 =$ ....

(c) $1\frac{1}{4} \times 3 =$ ....

(d) $2 \times 5\frac{1}{6} =$ ....

4 Multiplication Directly:

Multiplying a fraction by a whole number:

- Multiplying a fraction by a whole number, we multiply the numerator by the whole number, and the denominator remains the same because the denominator of the whole number is 1.

Ex. (a) $\frac{3}{5} \times 4 = \frac{3 \times 4}{5} = \frac{12}{5} = 2\frac{2}{5}$

(b) $\frac{3}{8} \times 2 = \frac{3 \times 2}{8} = \frac{6}{8} = \frac{3}{4}$

Multiplying a mixed number by a whole number:

- Write the mixed number as an improper fraction, then multiply this fraction by the whole number.

Ex. (a) $1\frac{1}{2} \times 3 = \frac{3}{2} \times 3 = \frac{3 \times 3}{2} = \frac{9}{2} = 4\frac{1}{2}$

(b) $4\frac{2}{3} \times 6 = \frac{14}{3} \times 6 = \frac{14 \times 6}{3} = \frac{84}{3} = 28$

The product is put in its simplest form if possible.

4 Find the product, then simplify your answer if possible:

a) $\frac{3}{4} \times 5 =$ ....

b) $\frac{2}{9} \times 3 =$ ....

c) $1\frac{5}{8} \times 4 =$ ....

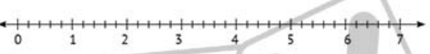
d) $1\frac{1}{3} \times 5 =$ ....

5 Ezz walks around of the garden 3 days per week.

The perimeter of the garden is $2\frac{1}{5}$ kilometers. What is the total distance that Ezz walks each week? Use the given strategies to create four different representations of the scenario.

a) Use Repeated Addition: ....

b) Draw a Number Line:



c) Draw a Diagram:

d) Use Improper Fractions: ....

e) Convert to meters to solve, then write the answer in kilometers:

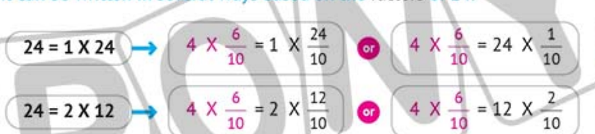
$2\frac{1}{5}$ km = ... m.

.... X .... = ... m = ... km.

Factors and Products

The multiplication: $4 \times \frac{6}{10} = \frac{24}{10}$

It can be written in several ways based on the factors of 24.



24 = 1 X 24	$4 \times \frac{6}{10} = 1 \times \frac{24}{10}$	or	$4 \times \frac{6}{10} = 24 \times \frac{1}{10}$
24 = 2 X 12	$4 \times \frac{6}{10} = 2 \times \frac{12}{10}$	or	$4 \times \frac{6}{10} = 12 \times \frac{2}{10}$
24 = 3 X 8	$4 \times \frac{6}{10} = 3 \times \frac{8}{10}$	or	$4 \times \frac{6}{10} = 8 \times \frac{3}{10}$
24 = 4 X 6	$4 \times \frac{6}{10} = 4 \times \frac{6}{10}$	or	$4 \times \frac{6}{10} = 6 \times \frac{4}{10}$

6 Write two different multiplication expressions that have the same product:

a) $6 \times \frac{3}{7}$ = ... X .... = ... X ....

b) $4 \times \frac{5}{6}$ = ... X .... = ... X ....

c) $3 \times \frac{4}{5}$ = ... X .... = ... X ....

Fraction Patterns

7 Complete the input-output tables, as in the example. Simplify your answers, if possible:

1 Rule ($\times \frac{4}{5}$)

	Input	Output
Ex.	2	$2 \times \frac{4}{5} = \frac{8}{5} = 1\frac{3}{5}$
a	3	
b	4	
c	5	

2 Rule (X $3\frac{5}{8}$)

	Input	Output
Ex.	2	$2 \times 3\frac{5}{8} = 2 \times \frac{29}{4} = \frac{58}{8} = \frac{29}{4} = 7\frac{1}{4}$
a	4	
b	6	
c	8	

10

1 Find the product in the simplest form:

a $3 \times \frac{5}{7}$ = ... + ... + ... = ...

b $5 \times 3\frac{2}{5}$ = ...

c $1\frac{1}{3} \times 4$ = ... × .... = ... = ...

d $\frac{5}{3} \times 6$ = ...

e $\frac{1}{2} \times 5$ = ...

2 Malek runs $1\frac{3}{5}$ km everyday, calculate the distance he runs in a week in km.

....

....

3 Mazen bought 10 cans of soda. If the price of each can is $7\frac{2}{5}$ LE, how much money did Mazen pay?

....

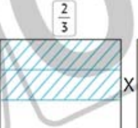
....

Multiplying Fractions Using Models
Multiplying Fractions by Fractions

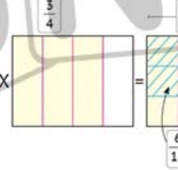
Modeling Multiplication

Ex. Use an area model to multiply $\frac{2}{3} \times \frac{3}{4}$

$$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$$



X



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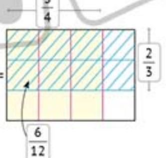
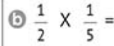
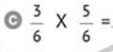


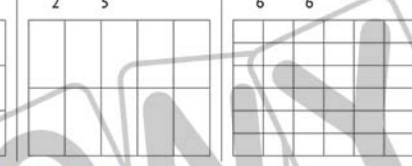
1 Use an area model to multiply:

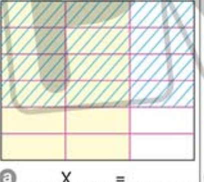
a) $\frac{3}{4} \times \frac{1}{3} =$ ....

b) $\frac{1}{2} \times \frac{1}{5} =$ ....

c) $\frac{3}{6} \times \frac{5}{6} =$ ....



2 Write the multiplication problem that is represented by each of the following models, then find the product. Simplify your answers, if possible:



a) ...... X ...... = ...

b) ...... X ...... = ...

c) ...... X ...... = ...

Theme 3

Multiplying a Fraction by a Fraction

- There are **two ways** to find the product:

1 Multiplying, then simplifying:

- Multiply first, and then put the result in its simplest form.

Ex. Find the product. Simplify your answers:

ⓐ $\frac{3}{10} \times \frac{8}{9} = \frac{24}{90} = \frac{4}{15}$ ← Simplest form

3 X 8 = 24 ÷ 6

10 X 9 = 90 ÷ 6

ⓑ $\frac{5}{7} \times \frac{7}{10} = \frac{35}{70} = \frac{1}{2}$

ⓒ $\frac{3}{8} \times \frac{2}{5} = \frac{6}{40} = \frac{3}{20}$

2 Simplifying, then multiplying

- Divide by the common factors of the opposite pairs of the numerator and the denominator, then multiply.

Ex. Find the product. Simplify your answers:

ⓐ $\frac{3}{10} \times \frac{8}{9} = \frac{4}{15}$

3 ÷ 3 (1) 8 ÷ 2 (4) 1 X 4 = 4

10 ÷ 2 (5) 9 ÷ 3 (3) 5 X 3 = 15

ⓑ $\frac{3}{\cancelto{4}{8}} \times \frac{\cancelto{1}{2}}{5} = \frac{3}{20}$

ⓒ $\frac{\cancelto{1}{5}}{\cancelto{1}{7}} \times \frac{\cancelto{1}{7}}{\cancelto{2}{10}} = \frac{1}{2}$

3 **Find the product. Simplify your answers, if possible:**

ⓐ $\frac{3}{8} \times \frac{1}{6}$ = ...

ⓑ $\frac{5}{12} \times \frac{3}{5}$ = ...

ⓒ $\frac{5}{8} \times \frac{4}{15}$ = ...

ⓓ $\frac{4}{5} \times \frac{2}{5}$ = ...

ⓔ $\frac{3}{8} \times \frac{2}{9}$ = ...

ⓕ $\frac{8}{9} \times \frac{1}{2}$ = ...

Quiz

$\frac{\quad}{10}$

1 Find the product in the simplest form:

ⓐ $\frac{4}{9} \times \frac{3}{16}$ = ...

ⓑ $\frac{4}{7} \times \frac{5}{2}$ = ...

ⓒ $\frac{2}{14} \times \frac{7}{8}$ = ...

ⓓ $\frac{5}{6} \times \frac{1}{3}$ = ...

ⓔ $\frac{5}{8} \times \frac{13}{13}$ = ...

2 Adam wants to buy three quarters of a pizza. If the price of each quarter equals $\frac{16}{18}$ LE, how much money will he pay in all?

....

....

Lessons 4&5 Multiplying Fractions and Mixed Numbers Multiplying Mixed Numbers Using Improper Fractions

- There are two ways to multiply mixed numbers using improper fractions.

1 Multiplying, then simplifying

- Write the mixed numbers as improper fractions.
- Multiply improper fractions.
- Put the result in its simplest form.

2 Simplifying, then multiplying

- Write the mixed numbers as improper fractions.
- Simplify the improper fractions.
- Multiply improper fractions.

Ex. ⓐ $3\frac{2}{3} \times \frac{3}{4}$

1 Multiplying, then multiplying

$$3\frac{1}{3} \times \frac{3}{5} = \frac{10}{3} \times \frac{3}{5} = \frac{30}{15} = 2$$

2 Simplifying, then multiplying

$$3\frac{1}{3} \times \frac{3}{5} = \frac{\cancel{10}^{2}}{\cancel{3}_{1}} \times \frac{\cancel{3}^{1}}{\cancel{5}_{1}} = \frac{2}{1} = 2$$

ⓑ $1\frac{1}{7} \times 1\frac{1}{6}$

1 Multiplying, then multiplying

$$1\frac{1}{7} \times 1\frac{1}{6} = \frac{8}{7} \times \frac{7}{6} = \frac{56}{42} = 1\frac{14}{42} = 1\frac{1}{3}$$

2 Simplifying, then multiplying

$$1\frac{1}{7} \times 1\frac{1}{6} = \frac{\cancel{8}^{4}}{\cancel{7}_{1}} \times \frac{\cancel{7}^{1}}{\cancel{6}_{3}} = \frac{4}{3} = 1\frac{1}{3}$$

Rewrite the mixed numbers as improper fractions. Then, simplify before you multiply, and simplify your answers:

a) $\frac{3}{8} \times 1\frac{2}{6}$ = ...

b) $3\frac{3}{4} \times \frac{2}{5}$ = ...

c) $4\frac{1}{2} \times 2\frac{2}{3}$ = ...

d) $1\frac{1}{3} \times 1\frac{3}{8}$ = ...

e) $4\frac{2}{7} \times 2\frac{1}{3}$ = ...

$\frac{\quad}{10}$

1 Find the product in the simplest form:

a) $2\frac{1}{7} \times 1\frac{4}{10}$ = ...

b) $5\frac{1}{2} \times \frac{3}{44}$ = ...

c) $\frac{3}{8} \times 1\frac{1}{3}$ = ...

d) $5\frac{1}{4} \times 2\frac{2}{3}$ = ...

e) $3\frac{1}{5} \times 1\frac{7}{8}$ = ...

2 Murad bought $1\frac{1}{4}$ kg of strawberries. If the price of each kg is $7\frac{1}{5}$ LE, how much money did Murad pay?

....

....

Theme 3

Lesson 6 Story Problems Involving Multiplication of Fractions and Mixed Numbers

When solving word problems

We use addition if:

- we understand from reading the problem that there are two or more quantities of the same kind and we need addition to get the sum.

We use multiplication if:

- we understand from reading the problem that there is repetition or multiplication.

1 **Aya purchased a bag of tomatoes from the market that has a mass of $2\frac{1}{3}$ kilograms. Her brother, Ameen, purchased a bag of potatoes that had a mass $1\frac{1}{2}$ times more than Aya's bag of tomatoes. What is the mass of Ameen's bag of potatoes?**

....

2 **Moustafa is harvesting sugar cane. He can harvest $3\frac{3}{4}$ kilograms of sugarcane in 1 hour. If he plans to work for $2\frac{1}{2}$ hours, how much sugarcane will he harvest?**

....

3 **Farida is reading a chapter in a book. She can usually read 20 pages in 1 hour. If she plans to read for 1 hour and 15 minutes, how many pages will she read?**

....

....

4 Seif bought 4 bags of soil for his garden. Each bag has a mass of $3\frac{1}{3}$ kilograms. If he only used $3\frac{1}{2}$ bags of soil, how many kilograms are left?

....

....

5 Write a multiplication story problem using $12\frac{1}{2}$ and $3\frac{2}{3}$.

....

....

$\frac{\quad}{10}$

1 Rocky finished a 200-meter race in $\frac{5}{12}$ of a minute. The winner of the race used $\frac{21}{25}$ of Rocky's time to finish the race. How much time did the winner use to finish the race?

....

2 At a school, there are 864 students. $\frac{3}{8}$ of the students are boys.

a. How many boys are there in the school?

....

b. $\frac{2}{9}$ of the boys joined the soccer team.

How many boys are there in the soccer team?

....

Multiplying and Dividing Fractions

9.2 Dividing Whole Numbers and Unit Fractions

Lesson 7 Convert Improper Fraction to Mixed Number

Learning Objective:

By the end of this lesson, the student will be able to:

- Explain how fractions represent division of whole numbers.

Lessons 8&9 Dividing Unit Fractions by Whole Numbers / Dividing Whole Numbers by Unit Fractions

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use models to divide unit fractions by whole numbers.
- Explain the relationship between division and multiplication of fractions.
- Use models to divide whole numbers by unit fractions.
- Apply the relationship between division and multiplication of fractions to solve problems.

Lesson 10 Story Problems Involving Division of Whole Numbers and Unit Fractions

Learning Objectives:

By the end of this lesson, the student will be able to:

- Solve story problems involving division of whole numbers and unit fractions.
- Simplify fractions and mixed numbers.

Convert Improper Fraction to Mixed Number

When using fractions to represent division, it becomes:

Dividend → Numerator **Divisor → Denominator**

Ex. Ahmed wants to divide 3 bars of chocolate among 4 of his friends. How much is the share of each of them?

- The share of each friend = $3 \div 4 = \frac{3}{4}$ piece.

Important Note: • In the corresponding model:

When dividing each model into 4 equal parts, each friend gets $\frac{3}{4}$ (3 parts).

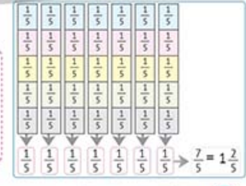
Ex. A fruit merchant divides 7 kilograms of oranges into 5 baskets. How many oranges are there in each basket?

- Quantity of oranges in each basket =

$$7 \div 5 = \frac{7}{5} = 1\frac{2}{5}$$

Quotient: 1, Divisor: 5, 7 − 5, Remainder: 2

Important Note: When dividing (7 ÷ 3), we find that, the quotient is 2 and the remainder is 1, so the quotient is written in the form of a mixed number



1 Using the following models, write the quotient as a fraction or a mixed number. Simplify your answers, if possible:

ⓐ $2 \div 3 =$ ....

ⓑ $7 \div 3 =$ ....

ⓒ $3 \div 5 =$ ....

ⓓ $4 \div 3 =$ ....

2 Complete the following table:

Expression	Ex. $9 \div 4$	ⓐ $8 \div 5$	ⓑ $4 \div 3$	ⓒ $6 \div 3$
Standard Division Algorithm	$\begin{array}{r} 2 \\ 4\overline{)\,9} \\ -\,8 \\ \hline 1 \end{array}$	$5\overline{)\,8}$		
Quotient	$\frac{9}{4} = 2\frac{1}{4}$	$\frac{8}{5} =$		

3 **Write the quotient as a fraction or a mixed number. Simplify your answers, if possible:**

a) 3 ÷ 8 = ... b) 6 ÷ 9 = ...

c) 5 ÷ 10 = ... d) 25 ÷ 15 = ...

e) 18 ÷ 8 = ... f) 16 ÷ 12 = ...

$\frac{\quad}{10}$

1 Use the following model to complete:

5 ÷ 8 = ...

2 Choose the correct answer:

a) $\frac{2}{7}$ = ... (2 ÷ 7 or 2 × 7 or 2 ÷ 7 or 2 – 7)

b) 13 ÷ 4 = ... R1 (2 or 3 or 4 or 5)

c) 15 ÷ 7 = ... ($7\frac{1}{2}$ or $2\frac{1}{7}$ or $1\frac{2}{7}$ or $1\frac{7}{2}$)

3 Complete the following:

a) 5 ÷ 7 = ...

b) 4 ÷ 8 = ...

c) 21 ÷ 28 = ...

d) 32 ÷ 24 = ...

Theme 3

Lessons 8&9 Dividing Unit Fractions by Whole Numbers / Dividing Whole Numbers by Unit Fractions

Remember

- Unit fractions are fractions with a numerator of 1.
- All unit fractions are less than $\frac{1}{2}$.
- When multiplying a unit fraction by the number in its denominator, the result is 1.

Ex. $\frac{1}{4} \times 4 = 1$ $\frac{1}{5} \times 5 = 1$

- The larger the number in the denominator of a unit fraction, the smaller the fraction.

1 Dividing Unit Fractions by Whole Numbers:

Ex. Divide: ⓐ $\frac{1}{2} \div 4$

First: Using models

Whole one

$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

Divide the whole one into two halves.

Divide each half into 4 parts.

- 8 parts, each part is an eighth.

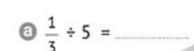
$$\frac{1}{2} \div 4 = \frac{1}{8}$$ The quotient is one part.

Second: By converting division into multiplication

- Dividing $\frac{1}{2}$ by 4, means finding $\frac{1}{4}$ from $\frac{1}{2}$ and it is the value of $\frac{1}{2} \times \frac{1}{4}$

So, $\frac{1}{2} \div 4 = \frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$

1 Find the quotient using the following models:



ⓐ $\frac{1}{3} \div 5 =$ ....

Whole one

ⓑ $\frac{1}{2} \div 7 =$ ....

Whole one

2 Divide:

ⓐ $\frac{1}{2} \div 3 =$ .... X .... = ...

ⓑ $\frac{1}{5} \div 2 =$ .... X .... = ...

ⓒ $\frac{1}{4} \div 6 =$ .... X .... = ...

ⓓ $\frac{1}{3} \div 3 =$ .... X .... = ...

2 Dividing Whole Numbers by Unit Fractions:

Ex. **Divide:** ⓐ $4 \div \frac{1}{2}$

First: Using models

Whole one		Whole one		Whole one		Whole one	
1		2		3		4	
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

← Draw a tape and divide it into 4 parts.

← Divide each part into two halves.

- 8 equal halves.

$(4 \div \frac{1}{2} = 8)$ ← The quotient is the number of parts.

Second: By converting division into multiplication

- Dividing 4 by $\frac{1}{2}$, means finding the number halves in 4. We know that every 1 consists of two halves, so the number of halves is 2 X 4.

So, $4 \div \frac{1}{2} = 4 \times 2 = 8$

- In the previous two examples, we find that, we have converted the division process into multiplication. The dividend remains unchanged, but the divisor is inverted (multiplicative inverse).

3 Find the quotient using the following models:

a) $3 \div \frac{1}{4} =$ ....

Whole one	Whole one	Whole one

b) $4 \div \frac{1}{3} =$ ....

Whole one	Whole one	Whole one	Whole one

4 Divide:

a) $5 \div \frac{1}{3} =$ .... X .... = ...

b) $4 \div \frac{1}{5} =$ .... X .... = ...

c) $6 \div \frac{1}{3} =$ .... X .... = ...

d) $3 \div \frac{1}{6} =$ .... X .... = ...

5 Complete, as in the examples:

Ex. $\frac{1}{2} \times 2 = 1$, $\frac{1}{2} \times 4 = 2$, $\frac{1}{2} \times 6 = 3$

a) $\frac{1}{3}$ X ...... = 1 , $\frac{1}{3}$ X ...... = 2 , $\frac{1}{3}$ X ...... = 3

b) $\frac{1}{4}$ X ...... = 1 , $\frac{1}{4}$ X ...... = 2 , $\frac{1}{4}$ X ...... = 3

6 Complete:

ⓐ $\frac{1}{3} \div$ .... $= \frac{1}{12}$ ⓑ $\frac{1}{3}$ X .... $= \frac{1}{12}$

ⓒ $\frac{1}{4} \div$ .... $= \frac{1}{20}$ ⓓ $\frac{1}{4}$ X .... $= \frac{1}{20}$

ⓔ $5 \div$ .... $= 15$ ⓕ 5 X .... = 15

Quiz

$\frac{\quad}{10}$

1 Choose the correct answer:

ⓐ $\frac{1}{5} \div 3 =$ .... (5 or $\frac{1}{5}$ or $\frac{1}{15}$ or 15)

ⓑ $8 \div \frac{1}{5} =$ .... (8 ÷ 5 or 5 ÷ 8 or 8 × 5 or 8 + 5)

ⓒ $\frac{1}{2} \times$ .... = 8 (4 or 8 or 16 or 2)

ⓓ $\frac{1}{5} \times$ .... $= \frac{1}{15}$ (3 or $\frac{1}{3}$ or $\frac{1}{5}$ or $\frac{1}{15}$)

2 Use the following models to complete:

ⓐ .... ÷ .... = ...

ⓑ .... ÷ .... = ...

3 Complete the following:

ⓐ $\frac{1}{6} \times$ .... = 3   ⓑ $\frac{1}{5} \times$ .... = 2

ⓒ $\frac{1}{2} \times$ .... = 3   ⓓ $\frac{1}{3} \times$ .... = 6

Lesson 10 Story Problems Involving Division of Whole Numbers and Unit Fractions

Important Note: • The story problems must be read and understood to determine the operation to be performed:
Addition - Subtraction - Multiplication - Division

1 **Choose the operation for each problem, identify which operation (addition, subtraction, multiplication, or division) should be used to model the situation described. (Then answer)**

ⓐ There are 4 kg of chickpeas, and the worker divides the chickpeas into $\frac{1}{4}$ kilogram packages. How many packages should be made?

....

ⓑ There are 4 bags of chickpeas, and each bag weighs $\frac{3}{4}$ kilogram.

What is the total mass of chickpeas? ....

....

ⓒ There are two packages of chickpeas, the first one is $2\frac{3}{4}$ kg and the second one is $1\frac{1}{2}$ kg. What is the total mass of chickpeas?

....

ⓓ There are $7\frac{1}{4}$ kg of chickpeas, the worker packed part of this quantity in packages and $3\frac{3}{4}$ kg remained. What quantity did the worker pack?

....

2 A turtle crawls $\frac{1}{2}$ kilometer per hour. How many hours does it take the turtle to cover a distance of 8 km?

....

3 Abdullah wraps 3 identical gifts, and uses $\frac{1}{2}$ of a roll of paper to wrap the gifts. If each gift uses the same amount of paper, how much paper does he use for each gift?

....

$\frac{\quad}{10}$

1 Choose the operation for each problem, identify which operation (addition, subtraction, multiplication, or division) should be used to model the situation described:

ⓐ Omar distributed $\frac{1}{2}$ kg of meat among 4 bags. What is the share of each bag? (............)

ⓑ Ahmed bought $1\frac{1}{2}$ kg of bananas and $2\frac{1}{4}$ kg of apples. What is the total mass of what he bought? (............)

ⓒ Ali has $3\frac{1}{2}$ bars of chocolate, he ate $1\frac{3}{4}$ bars of them. What is the remainder? (............)

2 Answer:

ⓐ The price of one kg of tomato is 10 pounds. What is the price of $\frac{1}{2}$ kg ?

....

ⓑ A painter paint $\frac{1}{3}$ of a wall in one hour. How long will it take to paint 4 walls?

....

Theme

4

Applications of Geometry and Measurement

Theme Units

Two-Dimensional Figures and Coordinate Planes

Investigating Attributes of Shapes

Lesson 1 Classifying of Geometric Shapes

Learning Objectives:

By the end of this lesson, the student will be able to:

- Classify two-dimensional figures into categories based on their attributes.
- Classify two-dimensional figures into categories and subcategories based on their attributes.
- Explain how two figures can belong to more than one subcategory.

Lesson 2 Tricky Triangles

Learning Objectives:

By the end of this lesson, the student will be able to:

- Measure the sides of triangles.
- Categorize triangles based on their properties..

Lessons 3&4 Calculating Area with Fractional Dimensions
Applying the Area Formula

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use tiling to find the areas of rectangles with whole number and fractional dimensions.
- Draw models to find the area of rectangles with whole number and fractional dimensions.
- Multiply to find the area of rectangles with whole number and fractional dimensions

Classifying of Geometric Shapes

Review of Geometrical Vocabulary and Terms

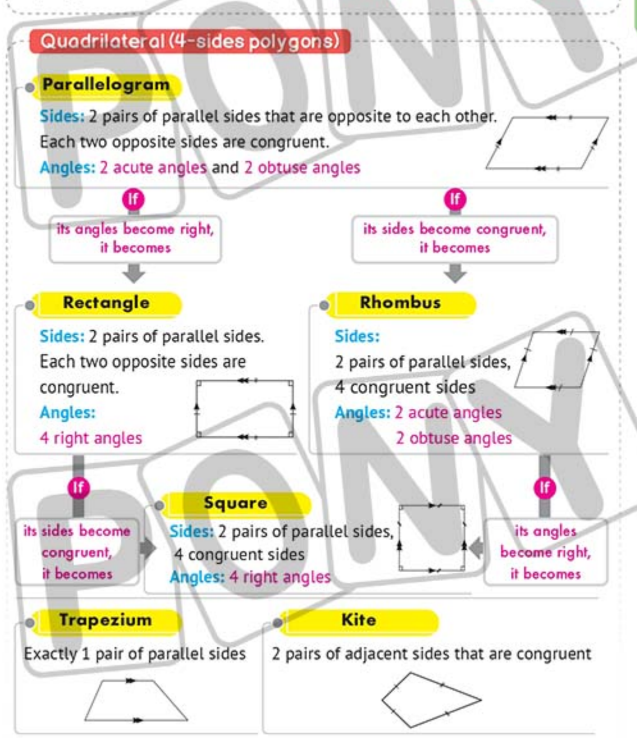
Ray	Line segment	Straight line
A B	A B	A B
Perpendicular lines	**Intersecting lines**	**Parallel lines**
C A B D	C B A D	A B C D
Obtuse angle	**Acute angle**	**Right angle**
Reflex angle	**Straight angle**	
Polygon	**Parallelogram**	**Square**
Trapezium	**Rectangle**	**Rhombus**
Two congruent shapes	**Shape with a line of symmetry**	

Unit 10

Remember

Polygons: They are closed two-dimensional shapes, consisting of at least three non-curved, non-intersecting sides.

A polygon is named according to the number of its sides and vertices.



1 Complete the following sentences:

ⓐ Quadrilaterals that have two pairs of parallel sides are:

.... , ... , ... , ...

ⓑ Quadrilaterals that have four sides of equal length are:

.... , ...

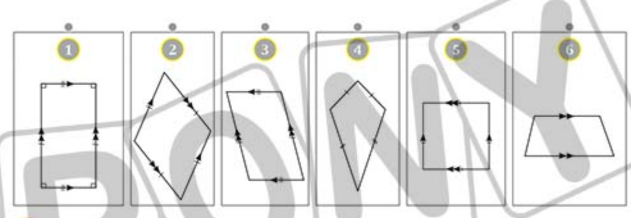
ⓒ Quadrilaterals that have four right angles are:

.... , ...

ⓓ A trapezium has exactly .... pair of parallel sides that are .... in length.

2 Match each quadrilateral with its name:

ⓐ Parallelogram ⓑ Rectangle ⓒ Rhombus ⓓ Square ⓔ Trapezium ⓕ Kite



3 Study the following figure, then write the type of each angle:

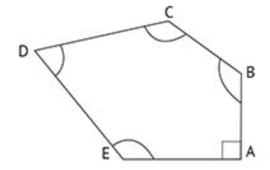
ⓐ Angle (A) is ....

ⓑ Angle (B) is ....

ⓒ Angle (C) is ....

ⓓ Angle (D) is ....

ⓔ Angle (E) is ....



Quiz

10

1 Complete the following:

a The polygon which has six sides is called ....

b The quadrilateral, in which all sides are equal in length and all angles are right, is called ....

c The .... has only one pair of parallel sides.

d The pentagon has .... sides.

2 Choose the correct answer:

a The polygon which has four sides is called ....

(hexagon or pentagon or quadrilateral or triangle)

b Mona is making a design of a quadrilateral with four equal sides, she is making a .... (trapezoid or rhombus or rectangle or parallelogram)

c The .... is a parallelogram with 4 right angles.

(trapezoid or rhombus or rectangle or parallelogram)

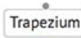
3 Match each figure to its name:

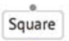
a

b

c

d

e




1 Rectangle · 2 Trapezium · 3 Triangle · 4 Rhombus · 5 Square · 6 Parallelogram

Tricky Triangles

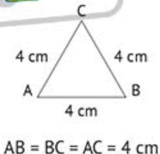
Triangles are classified based on their properties, as follows:

Classifying triangles by the length of their sides

1 Equilateral Triangle

3 equal sides

Ex.

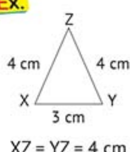


AB = BC = AC = 4 cm

2 Isosceles Triangle

2 equal sides

Ex.



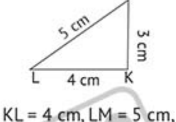
XZ = YZ = 4 cm

XY = 3 cm

3 Scalene Triangle

No equal sides

Ex.



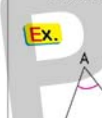
KL = 4 cm, LM = 5 cm, KM = 3 cm

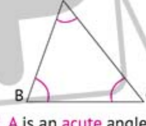
Classifying triangles by the measure of their angles

1 Acute Triangle

3 acute angle

Ex.





∠ A is an acute angle.
∠ B is an acute angle.
∠ C is an acute angle.

2 Right Triangle

1 right angle
2 acute angle

Ex.

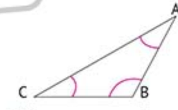
A, B, C

∠ A is an acute angle.
∠ B is a right angle.
∠ C is an acute angle.

3 Obtuse Triangle

1 obtuse angle
2 acute angle

Ex.



∠ A is an acute angle.
∠ B is an obtuse angle.
∠ C is an acute angle.

Important Notes:

- Any triangle has at least two acute angles.
- An equilateral triangle is an acute triangle, not vice versa.

1 **Measure the sides of each of the following triangles and determine the types of their angles, then classify them according to the lengths of their sides and the types of their angles. Use a ruler to measure the lengths to the nearest $\frac{1}{2}$ cm or the nearest whole number:**

a 1 The lengths of the sides:

AB = ... cm, AC = ... cm, BC = ... cm

2 The type of the triangle according to the lengths of its sides is ....

3 The types of its angles: ∠ A is ....,

∠ B is ...., and ∠ C is ....

4 The type of the triangle according to the types of its angles is ....

C

A B

b 1 The lengths of the sides:

XY = ... cm, YZ = ... cm, XZ = ... cm

2 The type of the triangle according to the lengths of its sides is ....

3 The types of its angles: ∠ Y is ....,

∠ X is ...., and ∠ Z is ....

4 The types of the triangle according to the types of its angles is ....

X

Y Z

c) 1 The lengths of the sides:

KL = ... cm, LM = ... cm,

KM = ... cm

M

K

L

2 The type of the triangle according to the lengths of its sides is ....

3 The types of its angles: ∠ K is ....,

∠ L is ...., and ∠ M is ....

4 The type of the triangle according to the types of its angles is ....

d) 1 The lengths of the sides:

AB = ... cm, AC = ... cm, BC = ... cm

C

A

B

2 The type of the triangle according to the lengths of its sides is ....

3 The types of its angles: ∠ B is ....,

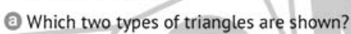
∠ A is ...., and ∠ C is ....

4 The type of the triangle according to the types of its angles is ....

Important Notes:

- An equilateral triangle is always an acute triangle. (All its angles are equal and measure 60° each.)
- An isosceles triangle can be: an acute-angled, obtuse-angled, or right-angled triangle.
- A scalene triangle can be an acute-angled, obtuse-angled, or right-angled triangle.

2 **Measure and label each triangle. Then, select the best name for each triangle based on its properties. Some triangles may be classified in more than one way:**



ⓐ Which two types of triangles are shown?

1 A scalene triangle

2 A right triangle

3 An isosceles triangle

4 An acute triangle

5 An equilateral triangle

6 An obtuse triangle

ⓑ Which two types of triangles are shown?

1 A scalene triangle

2 A right triangle

3 An isosceles triangle

4 An acute triangle

5 An equilateral triangle

6 An obtuse triangle

ⓒ Which two types of triangles are shown?

1 A scalene triangle

2 A right triangle

3 An isosceles triangle

4 An acute triangle

5 An equilateral triangle

6 An obtuse triangle

Theme 4

1 Classify each triangle as equilateral, isosceles, or scalene triangle:

a ....

b ....

c ....

2 Classify each triangle as acute, right, or obtuse triangle:

a ....

b ....

c ....

3 Choose the correct answer:

a The triangle of side lengths of 5 cm, 6 cm, and 7 cm is called ...... triangle.
(an equilateral or an isosceles or a scalene or a right)

b The triangle whose side lengths of .... is an equilateral triangle.
(7 cm, 5 cm, and 7 cm or 5 cm, 7 cm, and 5 cm or 4 cm, 4 cm, and 4 cm or 8 cm, 3 cm, and 6 cm)

c If AB = BC = AC, then the triangle ABC is a/an .... triangle.
(equilateral or isosceles or scalene or right)

d The right triangle has .... acute angle(s). (1 or 2 or 3 or 0)

4 Which two types of triangles are shown:

a An equilateral triangle
b An isosceles triangle
c A scalene triangle
d A right triangle
e An acute triangle
f An obtuse triangle

Calculating Area with Fractional Dimensions
Applying the Area Formula

Remember

Rectangle: It is a quadrilateral with:

- Two pairs of parallel sides.
- Each two opposite sides are equal in length.
- Four right angles.

Using Tiling to Find the Areas of Rectangles

Ex. **Draw a rectangle with a length of 8 units and a width of 4 units, then find its area**

	1	2	3	4	5	6	7	8	
	9	10	11	12	13	14	15	16	
	17	18	19	20	21	22	23	24	
	25	26	27	28	29	30	31	32	

The area of the rectangle = 32 square units.

1 **Draw a rectangle with a length of 7 units and a width of 5 units, then find its area.**

- The area of the rectangle = ... square units.

2 **Draw a rectangle whose area is 24 square units, then complete:**

- The length of the rectangle = ... units.
- The width of the rectangle = ... units.

Calculating the Area for Dimensions that Contain Fractions

1- By tilling with fractional dimensions:

- Area of rectangle = number of squares that formed the rectangle

2- By applying the area formula:

- Area of rectangle = length X width

Ex. **Draw a rectangle that has a length of $3\frac{1}{2}$ units and a width of 3 units, then find its area.**

Length: $3\frac{1}{2}$, Width: 3

1	1	1	$\frac{1}{2}$
1	1	1	$\frac{1}{2}$
1	1	1	$\frac{1}{2}$

1- By tilling with fractional dimensions:

- The area of the rectangle = $10\frac{1}{2}$ square units.

2- By applying the area formula:

- Area of rectangle = Length X Width

$$= 3\frac{1}{2} \times 3 = \frac{7}{2} \times 3 = \frac{21}{2} = 10\ \frac{1}{2} \text{ square units.}$$

Ex. **Draw a rectangle that has a length of $3\frac{1}{2}$ units and a width of $2\frac{1}{2}$ units, then find its area.**

Length: $3\frac{1}{2}$, Width: $2\frac{1}{2}$

1	1	1	$\frac{1}{2}$
1	1	1	$\frac{1}{2}$
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{4}$

1- By tilling with fractional dimensions:

- The area of the rectangle = $8\frac{3}{4}$ square units.

2- By applying the area formula:

- Area of rectangle = Length X Width

$$= 3\frac{1}{2} \times 2\frac{1}{2} = \frac{7}{2} \times \frac{5}{2} = \frac{35}{4} = 8\ \frac{3}{4} \text{ square units.}$$

3 **Draw a rectangle that has a length of $4\frac{1}{3}$ units and a width of 3 units, then find its area.**

1- By tilling with fractional dimensions:

- The area of the rectangle = ... square units.

2- By applying the area formula:

- Area of rectangle = Length X Width = ...

= .... square units.

4 **Draw a rectangle that has a length of $4\frac{1}{2}$ units and a width of $2\frac{1}{3}$ units, then find its area.**

1- By tilling with fractional dimensions:

- The area of the rectangle = ... square units.

2- By applying the area formula:

- Area of rectangle = Length X Width = ...

= .... square units.

Ex. **A rectangle has a length of $5\frac{1}{4}$ units, and a width of $3\frac{1}{3}$ units. Find its area.**

$$A = L \times W = 5\frac{1}{4} \times 3\frac{1}{3} = \frac{\cancel{21}^{7}}{\cancel{4}_{2}} \times \frac{\cancel{10}^{5}}{\cancel{3}_{1}} = \frac{35}{2} = 17\frac{1}{2} \text{ cm.}$$

5 **A rectangle has a length of $6\frac{3}{4}$ units, and a width of $\frac{4}{9}$ units. Find its area.**

....

10

1 Draw:

- a rectangle with length of $3\frac{1}{2}$ units and width of $2\frac{1}{4}$ units, then find its area.

The area of rectangle = ... square units.

2 Draw:

- a rectangle whose area is 18 square units.

The length of rectangle = ... units.

The width of rectangle = ... units.

3 Find the area of the following rectangle:

- ....

....

....

....

Two-Dimensional Figures and Coordinate Planes

Concept 10.2 Coordinate Planes

Lessons 5-7

Exploring the Coordinate Plane
Plotting Points on a Coordinate Plane
Coordinate Designs

Learning Objectives:

By the end of these lessons, the student will be able to:

- Describe a coordinate plane.
- Define elements of a coordinate plane.
- Identify points on a coordinate plane.
- Name points on a coordinate plane.
- Plot ordered pairs on a coordinate plane to create a picture.

Lesson 8

Representing Points and Creating Patterns

Learning Objectives:

By the end of this lesson, the student will be able to:

- Identify and extend numerical patterns.
- Graph points from a numerical pattern.

Lesson 9

Graphing Real-World Data

Learning Objectives:

By the end of this lesson, the student will be able to:

- Interpret data on coordinate planes.
- Solve real-world problems involving data on coordinate planes.

Exploring the Coordinate Plane
Plotting Points on a Coordinate Plane
Coordinate Designs

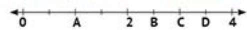
Theme 4

Remember

Number line: It is a straight line on which numbers are drawn as points separated by a regular distance, and it can be drawn horizontally or vertically.

Ex.

Notice each of the following two number lines:



The value of A is 1, the value of B is $2\frac{1}{2}$.

The value of C is 3, the value of D is $3\frac{1}{2}$.

To determine the distance between two points on a number line, we calculate the difference between the two points.

The distance between A and B is $2\frac{1}{2} - 1 = 1\frac{1}{2}$ units.

The distance between D and A is $3\frac{1}{2} - 1 = 2\frac{1}{2}$ units.

4
D
C
B
2
A
0

1 **Use the following number line to answer the questions:**

0 1 A B 3 C 4 D 5

a) The value of A is ....
b) The value of B is ....
c) The value of C is ....
d) The value of D is ....
e) The distance between A and B is .... units.
f) The distance between D and A is .... units.

Unit 10

2 **Use the following number line to answer the questions:**

2
D
C
1
B
A
0

ⓐ The value of A is .... ⓑ The value of B is ....

ⓒ The value of C is .... ⓓ The value of D is ....

ⓔ The distance between A and B is .... units.

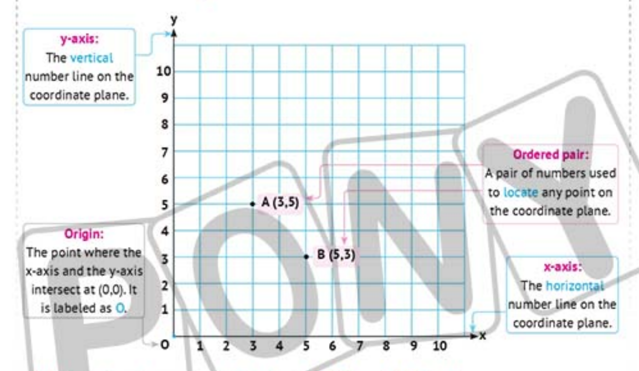
ⓕ The distance between C and A is .... units.

ⓖ The distance between D and B is .... units.

Coordinate Plane (Coordinate Grid)

It is a two-dimensional plane formed by the intersection of two number lines:

- The horizontal number line is known as the x-axis, and the vertical number line is known as the y-axis.



- **Ordered pairs are written from left to right (x, y):**

x-coordinate
It is the first number in an ordered pair, which tells how far to move left or right from the origin. It is labeled as x.

A (3 , 5)
B (5 , 3)

y-coordinate
It is the second number in an ordered pair, which tells how far to move up or down from the origin. It is labeled as y.

3 **Using the following coordinate plane, write the ordered pair that represents each of the following points:**

ⓐ A (............ , ...)

ⓑ B (............ , ...)

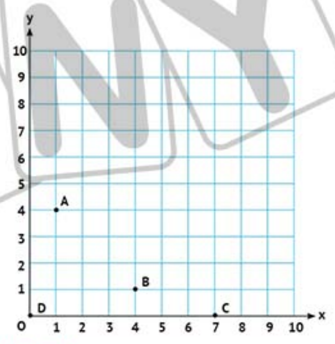
ⓒ C (............ , ...)

ⓓ D (............ , ...)

ⓔ Locate the following points:

E (2 , 3) , F (8 , 1)

G (0 , 9) , H (4 , 0)



4 **Complete using the coordinate grid:**

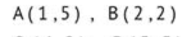
ⓐ The ordered pair that represents the library is (............ , ...).

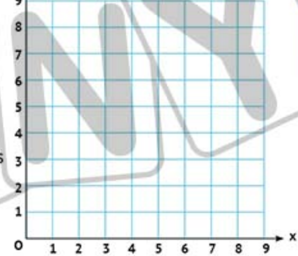
ⓑ The ordered pair that represents the park is (............ , ...).

ⓒ The ordered pair that represents the school is (............ , ...).

ⓓ To move from the school to the library, travel to the left of the x-coordinate .... units. Then, travel up from the y-coordinate .... units.

5 Locate the following points, then complete:





ⓐ Connect the above points in the following order:

ⓑ The name of the resulting shape is ....

ⓒ AB = ..., BC = ...

ⓓ $\overline{AB}$, ... are parallel and $\overline{BC}$, ... are parallel.

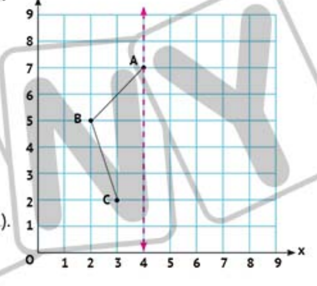
6 On the following coordinate plane, plot the points D and E to make a figure that is symmetrical along the vertical red line drawn on the coordinate plane.

Point D should follow point C:

Connect the points

to close the shape. Then, list the coordinates of

D (........ , ...) and E (........ , ...).



- All points on the x-axis have a y-coordinate (0). (8,0) – (3,0) – (5,0)
- All points on the y-axis have a x-coordinate (0). (0,8) – (0,3) – (0,5)

10

1 Complete using the opposite figure:

ⓐ Point A: (........,........)

ⓑ Point B: (........,........)

ⓒ Point C: (........,........)

ⓓ Point D: (........,........)

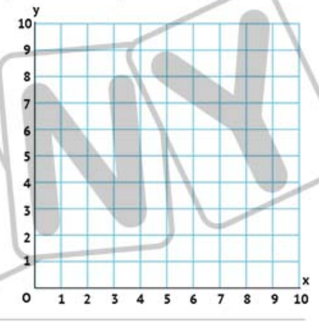
ⓔ BD = ... units

ⓕ CD = ... units

2 Plot the points on the following coordinate grid:

A(3,2) , B (3,5), C (6,5), D (6,2)

Connect the points in order. The polygon you created is ....



3 Choose the correct answer:

ⓐ The point .... lies on x-axis. ((2,3) or (0,7) or (5,5) or (7,0))

ⓑ The point .... lies on y-axis. ((5,3) or (0,2) or (1,1) or (6,0))

Representing Points and Creating Patterns

From Ordered Pairs to a Table

- Ordered pairs can be represented by tables showing x-values and y-values.

Ex. **Use the ordered pairs to fill in the table:**

(2,4) ; (3,6) ; (4,8) ; (5,10) ; (6,12) ; (7,14)

x-values	2	3	4	5	6	7
y-values	4	6	8	10	12	14

Important Notes:

- The x-values are in pattern: (2 , 3 , 4 , 5, 6 , 7 ,.......) increase by 1
- The y-values are in pattern: (4, 6, 8, 10 , 12, 14,.......) increase by 2

1 **Use the ordered pairs to fill in the table:**

(1 , 0) , (2 , 3) , (3 , 6) , (4 , 9) , (5 , 12)

x-values	1	....	....	4	....	....	....
y-values	....	3	....	....	....	....	....

2 **Extend the following table, identify the pattern of x-values and y-values, then write the represented ordered pairs:**

x-values	2	4	6	8	....	....	....
y-values	5	10	15	....	25	....	....

(........ , ...) , (........ , ...) , (........ , ...) , (........ , ...) ,

(........ , ...) , (........ , ...) , (........ , ...)

Theme 4

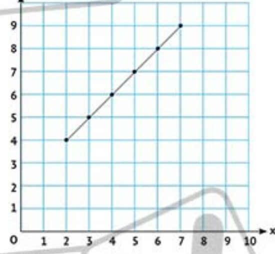
Graph Points From a Numerical Pattern

- A table showing x-values and y-values is represented in the coordinate plane using ordered pairs.

Ex. **Represent the following table on the coordinate plane:**

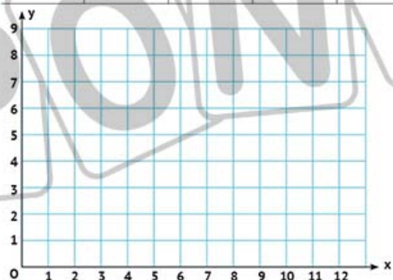
x-values	2	3	4	5	6	7
y-values	4	5	6	7	8	9

- The ordered pairs represented in the table are:
  (2 , 4) , (3 , 5) , (4 , 6)
  (5 , 7) , (6 , 8) , (7 , 9)
- Each ordered pair is represented by a point on the coordinate plane.
- The plotted points create a line called a line graph.



3 **Use the ordered pairs to fill in the table:**

x-values	1	3	5	7	9	11
y-values	1	2	3	4	5	6



- Two patterns can be represented together on one coordinate grid, and they are distinguished by drawing the line that represents each pattern in a different color and making a key for the drawing.

Ex. **Represent the following two tables on one graph:**

Pattern 1

x-values	1	2	3	4
y-values	2	4	6	8

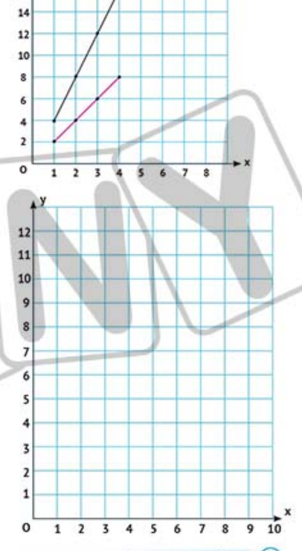
Pattern 2

x-values	1	2	3	4
y-values	4	8	12	16

- The data for each is represented by a different colour.
- A graph key is made, as follows:

■ Pattern 1

■ Pattern 2



4 **Represent the following two tables on one graph:**

Pattern 1

x-values	1	2	3	4
y-values	1	2	3	4

Pattern 2

x-values	1	2	3	4
y-values	3	6	9	12

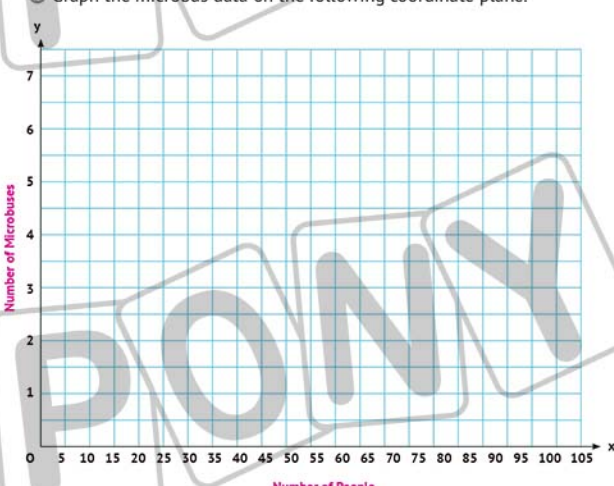
- Key: ☐ Pattern 1 ☐ Pattern 2

5 **Kamal runs a transportation company and considers adding to his fleet of microbuses. Each bus can hold 15 passengers.**

ⓐ Extend the pattern to complete the table:

Total Number of Passengers, x	15	30	....	60	....	90	....
Number of Microbuses, y	1	2	3	....	5	....	....

ⓑ Graph the microbus data on the following coordinate plane.



Quiz

10

1 Use the ordered pairs to fill in the following table:

(1,3) , (2,4) , (3,5) , (4,6) , (5,7) , (6,8) , (7,9)

x-values	1	....	3	....	5	....	7
y-values	....	4	....	6	....	8	....

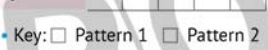
2 Represent the following two tables on the graph:

Pattern 1

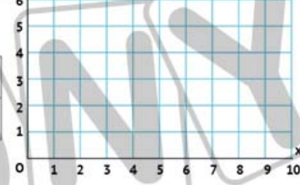
x-values	1	2	3	4	5
y-values	2	3	4	5	6

Pattern 2

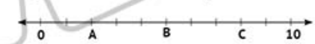
x-values	1	2	3	4	5
y-values	2	4	6	8	10



- Key: ☐ Pattern 1 ☐ Pattern 2



3 Use the following number line to complete:



- The value of:

a) A is ....   b) B is ....   c) C is ....

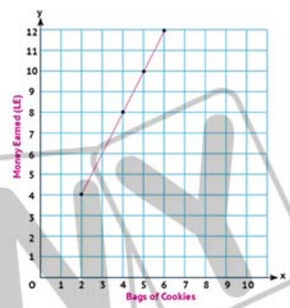
Theme (4)

Graphing Real-World Data

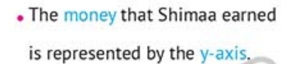
Ex. **Shimaa is selling bags of cookies in her neighborhood. She earns 2 LE for each bag of cookies she sells. Complete the following table, then graph the points on the coordinate grid.**

Bags of Cookies	2	4	5	6
Money Earned (LE)	4	8	10	12

- The previous table can be represented graphically by points using the coordinate plane as follows:



- The number of bags is represented by the x-axis.



- The money that Shimaa earned is represented by the y-axis.
- The ordered pairs that represent points are as follows:

(2 , 4) – (4 , 8) – (5 , 10) – (6 , 12)

- Through the drawing, it is possible to know the money she earns if she sells 7 bags, which is 14 pounds, as shown on the drawing in red.

- The relationship between the x-coordinate and the y-coordinate is called the pattern rule:

The money that Shimaa earns = the number of bags x 2

$y = 2x$

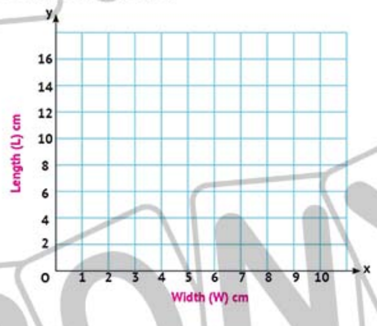
1 The length of a rectangle is twice its width in centimeters.

This information can be represented by the rule:

Length (L) = 2 X Width (W). Use the pattern to complete the table:

Width (W), X	1	2	....	5	....	8
Length (L = 2 x W), Y	2	4	8	....	12	....

a Using the width data as x-coordinates and the length data as y-coordinates, plot the data on the coordinate grid. Then, draw a line to connect the points.



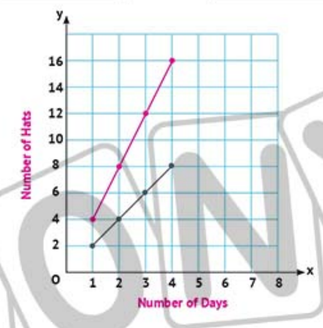
b Answer the following questions:

1. If the width of the rectangle is 3 centimeters, then the length is .... cm.
2. If the width of the rectangle is 5.5 centimeters, then the length is .... cm.
3. If the length of the rectangle is 6 centimeters, then the width is .... cm.
4. If the length of the rectangle is 14 centimeters, then the width is .... cm.

Ex. Hana and Sameh make hats. Hana makes 2 hats a day, and Sameh makes 4 hats a day. The following two tables show what each of them does:

Hana (2 hats a day)	
Number of Days	Number of Hats
1	2
2	4
3	6
4	8

Sameh (4 hats a day)	
Number of Days	Number of Hats
1	4
2	8
3	12
4	16

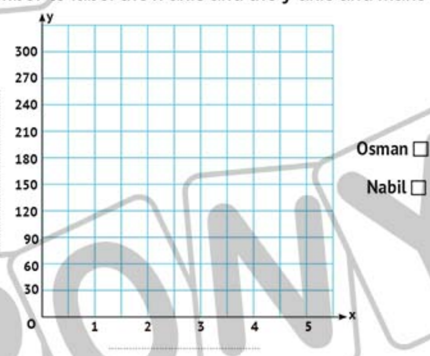


- The number of days can be represented by the x-axis.
- The number of hats can be represented by the y-axis. (or vice versa)
- Remember to label each axis.
- The data for each is represented by a different color.
- A graph key is made, as follows: ■ Hana ■ Sameh

2 Nabil and Osman are in a 5-hour bike race. Nabil is traveling at a rate of 30 kilometers per hour. Osman is traveling at a rate of 60 km/hr. Use that information to complete the tables:

Nabil (30 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)	....	....	....	....	....
Osman (60 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)	....	....	....	....	....

a Graph the data from your table on the coordinate plane.
Use a different color to represent each biker's data.
Remember to label the x-axis and the y-axis and make a key.



b Answer the following questions:

1. At the end of the race, who traveled farther? ....
2. How much farther did he travel? ....
3. The boys biked 120 kilometers at different times. How long did it take each of them?

Nabil: .... Osman: ....

Theme 4

Quiz

10

1 Ahmed scores twice as much as his brother Omar scores, and this relationship is represented in the following table:

Omar	1	....	3	....	5
Ahmed	2	4	....	8	....

- Represent the table on the graph.

2 Soha drives her car at a speed of 50 km/hr. Her husband, Amgad, drives his car at a speed of 70 km/hr:

- Use this information to complete the two tables, then represent the tables graphically:

Soha 50 km/hr	**Number of Hours**	1	2	3	4
	Total Distance (km)	....	....	....	....

Amgad 50 km/hr	**Number of Hours**	2	3	4	5
	Total Distance (km)	....	....	....	....

- ☐ Soha ☐ Amgad ....

Unit 11

Volume

Concept 11.1 Understanding Volume and Capacity

Lessons 1-3

Geometric Shapes Around Us
Measuring Volume in Cube Units
Same Volume, Different Shape

Learning Objectives:

By the end of these lessons, the student will be able to:

- Name three-dimensional figures.
- Identify attributes of three-dimensional figures.
- Define volume and capacity.
- find the volume of the cuboid in unit cubes.
- Use unit cubes to measure the volume of rectangular prisms.
- Use unit cubes and models to create right rectangular prisms with a given volume.

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Geometric Shapes Around Us
Measuring Volume in Cube Units
Same Volume, Different Shape

Three-Dimensional Shapes (Solids)

They are geometric shapes that:

- have three dimensions (length - width - height).
- may have edges, faces, and vertices.
- Some of these shapes can be filled with liquid.

(Hollow Solids)

Width, Length, Height

Edge, Vertex, Face

Attributes of Three-Dimensional Shapes

3D Shape	Cube	Cone	Cylinder	Rectangular Prism	Sphere	Square Pyramid
Face/Base Shape(s)	Square	Circle	Circle	Rectangle and Square	None	Triangle and Square
Number of Faces/Bases	6	1	2	6	0	5
Number of Edges	12	0	0	12	0	8
Number of Vertices	8	1	0	8	0	5

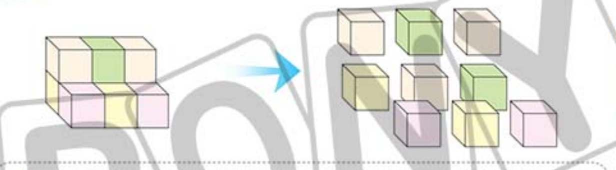
- **Volume:** The amount of space occupied by a 3D shape.
  Or the number of cubic units the shape is made of.
- **Capacity:** It is the amount of liquid that a container can contain.
- **The unit of measurement for volume:**

Cubic centimeter (cm^3): It is the volume of a cube whose edge (side) length is **1** cm.

- **The unit of measurement of capacity:**

1 milliliter = 1 cm^3 and 1 liter = 1,000 milliliters (cm^3)

Ex. **Note the following shape:**



- To count the cubes that make up the shape, you must know that there are invisible cubes.
- Number of cubes = 9 cubes

So, the volume = 9 cm3.

Each cube represents a cubic centimeter.

1 **Find the volume (number of cubes) of each of the following shapes, where each cube represents 1 cm^3:**

ⓐ Volume = ... cm^3

ⓑ Volume = ... cm^3

ⓒ Volume = ... cm^3

ⓓ Volume = ... cm^3

Ex. ❶ Copy the given figure onto your grid paper.

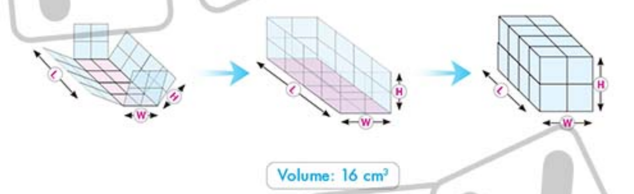
❷ Cut out the image.

❸ Fold the shape, so that the shaded section is the base of the shape.

❹ Tape the shape together to form a box.

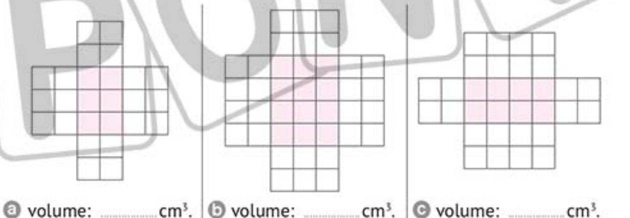
❺ Estimate the volume of the shape.

❻ Use the centimeter cubes to measure the actual volume.



Volume: 16 cm^3

2 **Copy the given figures onto your grid paper. Cut out the image and fold the shape to form a box. Estimate the volume of the shape. Use the centimeter cubes to measure the actual volume:**



ⓐ volume: .... cm^3.
ⓑ volume: .... cm^3.
ⓒ volume: .... cm^3.

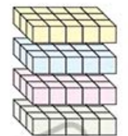
Layers and Slices

A rectangular prism can be divided into layers (horizontal) or slices (vertical) to calculate its volume.

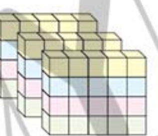
Ex. **Decompose the opposite rectangular prism into layers or slices and calculate its volume, since each cube represents 1 cm³.**

There are several ways to solve:

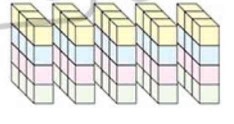
1
- Number of layers: 4 layers
- The number of cubes of each layer is 15 cubes.
- Volume of the prism = 4 X 15 = 60 cm³.



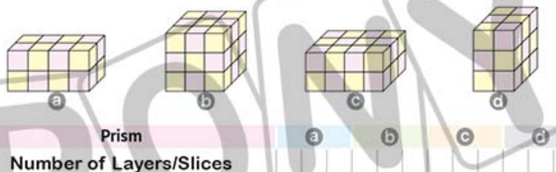
2
- Number of layers: 3 slices.
- The number of cubes of each layer is 20 cubes.
- Volume of the prism = 3 X 20 = 60 cm³.



3
- Number of layers: 5 slices.
- The number of cubes of each layer is 12 cubes.
- Volume of the prism = 5 X 12 = 60 cm³.



3 Decompose the following rectangular prisms into layers or slices and calculate their volumes, since each cube represents 1 cm³:



Prism	a	b	c	d
Number of Layers/Slices				
Number of Cubes in Each Layer/Slice				
Volume of the Prism				

/ 10

1 Choose the correct answer:

a) A .... has 8 vertices.
(sphere or cone or rectangular prism or square-based pyramid)

b) A cuboid has 3 horizontal layers and 8 cube units in each layer. Then its volume = ... cube units (11 or 24 or 48 or 22)

c) The volume of the opposite solid is .... cube units.
(6 or 8 or 10 or 9)

2 Complete the following:

a) The opposite solid is called ....

b) The 3D shape that has 2 faces, each in the shape of a circle, is ....

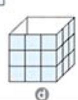
c) The number of edges in a cube is ....

3 What solid is formed from folding the net square ?

a

b

c


d

Unit 11

Volume

Concept 11.2 Measuring Volume

Lessons 4&5 Finding a Formula / Using a Formula to Find Volume

Learning Objectives:

By the end of these lessons, the student will be able to:

- Identify a formula for calculating the volume of right rectangular prisms.
- Use a formula to calculate the volume of right rectangular prisms.
- Apply a formula to calculate the volume of right rectangular prisms.

Lessons 6&7 Finding the Volume of Compound Shapes / Solving Real-World Volume Story Problems

Learning Objectives:

By the end of these lessons, the student will be able to:

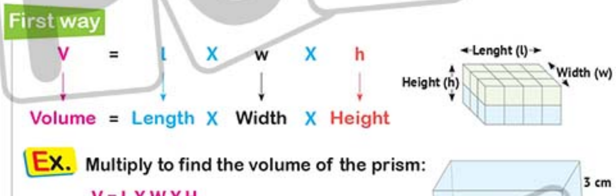
- Find the total volume of two or more cuboids.
- Solve real-world story problems involving volume.
- Design a city using three-dimensional shapes and a set of criteria.

Finding a Formula
Using a Formula to Find Volume

Volume Formula

- The volume of a right rectangular prism can be calculated in one of two ways.

First way

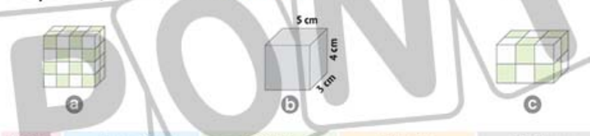


Ex. Multiply to find the volume of the prism:

V = L X W X H

= 12 X 6 X 3 = 216 cm^3.

1 Record the dimensions of each of the following rectangular prisms, then find the volume:



Prism	Length	Width	Height	Volume
a	.... cm	.... cm	.... cm	.... cm^3
b	.... cm	.... cm	.... cm	.... cm^3
c	.... cm	.... cm	.... cm	.... cm^3

Second way

$V = b \times h$

Volume = Area of the base/face X Height/Third dimension

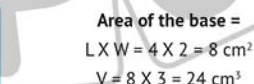
2 Layers

Area of the base =

L X W = 4 X 3 = 12 cm²

V = 12 X 2 = 24 cm³

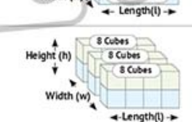
3 Slices



Area of the base =

L X W = 4 X 2 = 8 cm²

V = 8 X 3 = 24 cm³



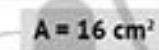
4 Slices

Area of the base =

L X W = 3 X 2 = 6 cm²

V = 6 X 4 = 24 cm³

Ex. Find the volume of the prism:



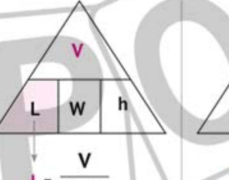
$V = b \times h = 16 \times 14 = 224$ cm³

2 Record the dimensions of each of the following rectangular prisms, then find the volume:

Prism	Base/Face Area	Third Dimension	Volume
a	.... cm	.... cm	.... cm
b	.... cm	.... cm	.... cm
c	.... cm	.... cm	.... cm

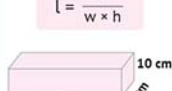
Find the Missing Dimension

- If we have the volume of a rectangular prism and two of its dimensions, we can find the unknown dimension using one of the formulas shown in the following figure.



$L = \dfrac{V}{W \times h}$

$l = \dfrac{V}{w \times h}$



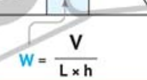
$V = 400\ cm^3$

(Face area):

$= 5 \times 10 = 50\ cm^2$

$L = V \div (W \times H)$

$= 400 \div 50 = 8\ cm$



$W = \dfrac{V}{L \times h}$

$w = \dfrac{V}{l \times h}$

$V = 144\ cm^3$

(Face area):

$= 4 \times 9 = 36\ cm^2$

$W = V \div (L \times h)$

$= 144 \div 36 = 4\ cm$

$h = \dfrac{V}{L \times W}$

$h = \dfrac{V}{l \times w}$

? cm

12 cm

4 cm

$V = 480\ cm^3$

(Base area):

$= 12 \times 4 = 48\ cm^2$

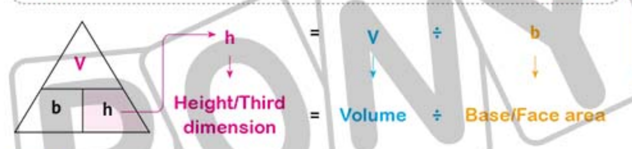
$h = V \div (L \times W)$

$= 480 \div 48 = 10\ cm$

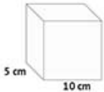
3 Complete the following table:

Prism	Length	Width	Height	Volume
a	5 cm	3 cm	2 cm	.... cm^3
b	.... cm	2 cm	5 cm	60 cm^3
c	10 cm	.... cm	4 cm	120 cm^3
d	8 cm	5 cm	.... cm	80 cm^3

- If we have the volume of a rectangular prism and the area of one of the faces, then we can find the third dimension using the following formula.



Ex. The volume of the rectangular prism shown is 400 cubic centimeters. Find the missing dimension.



Base area = L X W = 10 X 5 = 50 cm²

Height = V ÷ b = 400 ÷ 50 = 8 cm

4 The volume of a rectangular prism is 360 m³, its length is 15 m, and its width is 6 m. Find its height.

....

....

....

....

5 The volume of a rectangular prism is 240 cm³, its base area is 60 m². Find its height.

....

....

....

....

6 **Which is bigger in volume?**

A rectangular prism with dimensions of 8 cm, 5 cm, and 3 cm, or a rectangular prism with a base area of 20 cm² and a height of 6 cm.

....

....

....

Quiz

10

1 Choose the correct answer:

ⓐ The volume of rectangular prism = ...

(L + W + h or (L + W) × h or L × W + h or L × W × h)

ⓑ The dimensions of a cuboid is 3 cm, 5 cm, and 2 cm, then its volume is .... cm³. (30 or 10 or 16 or 21)

ⓒ The volume of a cuboid is 40 cm³ and the base area is 10 cm², then its height = ... cm. (400 or 40 or 4 or 5)

ⓓ The base area of a cuboid is 30 cm², and its height is 3 cm, then its volume is .... cm³. (90 or 60 or 900 or 33)

2 Find the volume of each of the following:

ⓐ

....

ⓑ

....

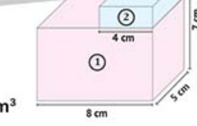
ⓒ

....

Finding the Volume of Compound Shapes
Solving Real-World Volume Story Problems

Finding the Volume of Compound Shapes

Ex. Calculate the volume of the following compound shape:



- Volume of prism (1):

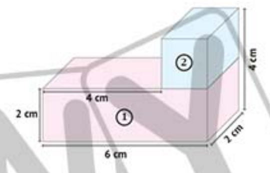
  V = L X W X h = 8 X 5 X 7 = 280 cm^3

- Volume of prism (2):

  V = L X W X h = 5 X 4 X 2 = 40 cm^3

- Volume of the shape: V = 280 + 40 = 320 cm^3

1 Calculate the volume of the following compound shape:



ⓐ Volume of prism (1):

....

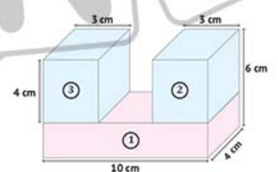
ⓑ Volume of prism (2):

....

ⓒ Volume of the shape:

....

2 Calculate the volume of the following compound shape:



ⓐ Volume of prism (1):

....

ⓑ Volume of prism (2):

....

ⓒ Volume of prism (3):

....

ⓓ Volume of the shape:

....

Ex. A car for transporting building materials has a box in the shape of a rectangular prism with a length of 5 m, a width of 2 m, and a height of 3 m. Sand has been placed to a height of 2 m. What is the size of the empty part of the box?

Solution

- **Volume of the box:** $V = L \times W \times h = 5 \times 2 \times 3 = 30\ m^3$.
- **Volume of sand:** $V = L \times W \times h = 5 \times 2 \times 2 = 20\ m^3$.
- **Volume of the empty part:** $V = 30 - 20 = 10\ m^3$.

Another Solution

Height of the empty part: $3 - 2 = 1$ m.

Volume the empty part: $V = 5 \times 2 \times 1 = 10\ m^3$.

3 Fares built a small planter box for his window. He planned to fill it to the top with 12,000 cubic centimeters of soil. The base of the planter box measured 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?

....

....

....

4 Mouataz built a model of a sarcophagus from cardboard.

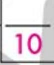
The model was 30 cm long, 10 cm wide, and 8 cm tall.

Is it possible for Mouataz to fit a rectangular canopic chest with an interior volume of 3,000 cm^3 inside?

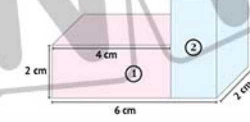
Support your thinking with a drawing and an equation.

....

....



1 Calculate the volume of each of the following compound shapes:



a Volume of prism (1) is ....

b Volume of prism (2) is ....

c Volume of the shape is ....

2 Which is greater in volume:

A rectangular prism whose dimensions are 5 cm, 3 cm, and 8 cm.

Or a rectangular prism whose base area is 20 cm^2, and its height is 7 cm.

3 A builder used 300 bricks for building up a wall. if each brick is in the shape of cuboid of dimensions 20 cm, 10 cm, and 5 cm, calculate the volume of the wall.

Unit 12

Pie Charts

Concept 12.1 Understanding Pie Charts

Lessons 1-3

- Exploring Pie Charts
- Interpreting Data in a Pie Chart
- Making Pie Charts

Learning Objectives:

By the end of these lessons, the student will be able to:

- Define the elements of a pie chart.
- Identify connections between pie charts, fractions, and degrees of a circle.
- Interpret data in a pie chart.
- Shade a pie chart to display a set of data.
- Ask and answer questions about data in a pie chart.

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Exploring Pie Charts
Interpreting Data in a Pie Chart
Making Pie Charts

Remember

Line Plot

It is used to show repetition on a number line.

Double Bar Graph

It is used to compare two things.

Bar Graph

It is used to compare different things.

Line Graph

It is used to track changes over a period of time.

Representing Data Using Pie Charts

It is one of the ways to represent data, and this is done by using a circle that is divided into parts according to the given data, and each part of the circle is called a pie sector.

Ex. **The following pie chart represents a comparison of the numbers of boys and girls in a school:**

Important Notes:

- Part of the circle (circular sector) represents boys and the other represents girls.
- The size of each sector is proportional to the number it represents (the number of boys > the number of girls).
- The chart has a title and a key.

Title → Number of Students

Boys

Girls

Key

Pie Charts and Fractions

When representing data using pie charts, the data can be converted into fractions to find out what each element represents in relation to the total data and divide the circle according to these fractions.

Ex. **The following table represents the results of the survey about the most preferred sport by a group of students:**

Sport	Football	Basketball	Swimming	Gymnastics
Number of Students	12	6	3	3

Important Notes:

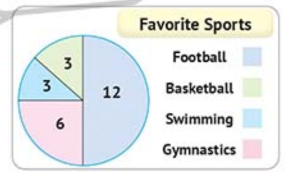
- The total number of students who participated in the survey: $3 + 3 + 6 + 12 = 24$ students.
- The fraction that represents the number of students who prefer:

  ⓐ Football $= \frac{12}{24} = \frac{1}{2}$

  ⓑ Basketball $= \frac{6}{24} = \frac{1}{4}$

  ⓒ Swimming $= \frac{3}{24} = \frac{1}{8}$

  ⓓ Gymnastics $= \frac{3}{24} = \frac{1}{8}$



1 The following pie chart represents the amounts that Galal spent in 4 days. If the total amount he spent was 60 pounds, what fraction represents what he spent each day?

ⓐ Sunday: ....

ⓑ Monday: ....

ⓒ Tuesday: ....

ⓓ Wednesday: ....

2 The following frequency table shows the favorite ice cream flavors of a group of children:

Flavor	Chocolate	Pistachio	Mastic	Mango
Number of Children	18	9	6	3

ⓐ Choose the fraction that represents each flavor of ice cream. Shade the following pie chart, identify its parts, and write the title and key:

($\frac{1}{2}$ or $\frac{1}{4}$ or $\frac{1}{6}$ or $\frac{1}{12}$)

The fraction representing:

1. Chocolate ice cream: ....
2. Pistachio ice cream: ....
3. Mastic ice cream: ....
4. Mango ice cream: ....

ⓑ Answer the following questions:

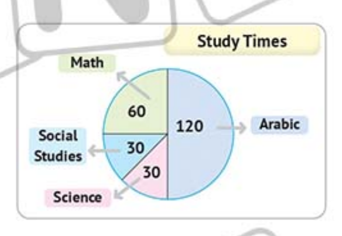
1. What is the most preferred type of ice cream? ....
2. What is the least preferred type of ice cream? ....
3. How many more children chose pistachio ice cream than those who chose mango ice cream? ....
4. How many fewer children chose mastic ice cream than those who chose chocolate ice cream? ....
5. How many children participated in the survey? ....

Theme 4

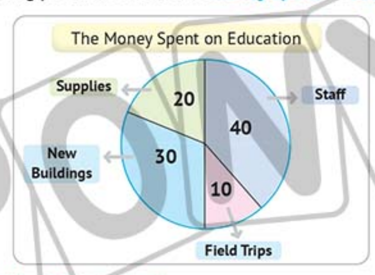
- What each part of a pie chart represents can be expressed using decimals.

Ex. The following pie chart shows the study times in minutes that Adel spends per day:

Subject	Fraction	Decimal
Arabic	$\frac{120}{240} = \frac{1}{2}$	0.5
Math	$\frac{60}{240} = \frac{1}{4}$	0.25
Science	$\frac{30}{240} = \frac{1}{8}$	0.125
Social Studies	$\frac{30}{240} = \frac{1}{8}$	0.125



3 The following pie chart shows the money spent on education:



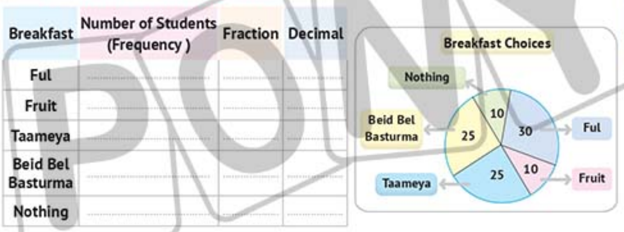
- Complete the following table

Spending Aspect	Staff	Supplies	New Buildings	Field Trips
Decimal	....	....	....	....

4 **The following pie chart represents the favorite breakfast of a number of students. Study the chart carefully.**

a **Complete the following table:**

Breakfast	Number of Students (Frequency)	Fraction	Decimal
Ful	....	....	....
Fruit	....	....	....
Taameya	....	....	....
Beid Bel Basturma	....	....	....
Nothing	....	....	....



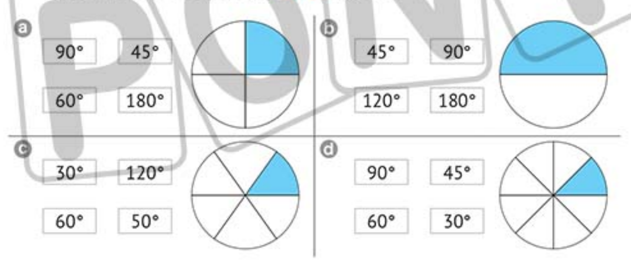
b **Answer the following questions:**

1. What is the most frequent breakfast choice? ....
2. What are the two choices that half of the students chose? ....
3. What are the least two choices that the students chose? ....

Fractions of a Circle and Circular Degrees

- When a circle is divided into 360 equal parts, each part represents an angle of one degree.

5 **Select the circular degrees that match the fraction of the shaded circle. A circle has 360 degrees.**



10

1 A librarian made an inventory of the books in his library, and their types; he found the following:

$\frac{1}{4}$ of the books are religious.

$\frac{1}{4}$ of the books are literary.

$\frac{1}{2}$ of the books are scientific.

Represent these data using the previous pie chart. If the total number of books is 600, complete:

a) The number of religious books is ....

b) The number of literary books is ....

c) The number of scientific books is ....

2 The following figure shows the favorite ice cream flavors of a group 40 children. Complete the following table:

Flavor	Fraction	Decimal
Mango		
Vanilla		
Chocolate		
Mastic		

Vanilla 10
Chocolate 10
Mango 15
5 Mastic

سلسلة كتب الأستاذ

Exercises, Final Revision, Exams & Answers

Prepared by:
Mohamed Nasreldin

Revised by:
Amr Madany
Attia Ibrahem Assad
Ahmed Nassr

5th Primary

Second Term

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Applications of Geometry and Measurement

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Unit 8 Adding and Subtracting Mixed Numbers

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Concept 9.1: Multiplying Fractions and Mixed Numbers

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Unit 7 Adding and Subtracting Fractions

Concept 7.1 Adding and Subtracting Fractions With Unlike Denominators

Lesson 1

1 Find the smallest like denominator for the fractions listed. Then, change each fraction so that each fraction is rewritten with the smallest like denominator:

a) $\frac{2}{3}$ and $\frac{5}{6}$ → $\frac{2}{3}$ = ... , $\frac{5}{6}$ = ...

b) $\frac{1}{5}$ and $\frac{3}{10}$ → $\frac{1}{5}$ = ... , $\frac{3}{10}$ = ...

c) $\frac{2}{4}$ and $\frac{5}{8}$ → $\frac{2}{4}$ = ... , $\frac{5}{8}$ = ...

d) $\frac{3}{10}$ and $\frac{1}{2}$ → $\frac{3}{10}$ = ... , $\frac{1}{2}$ = ...

e) $\frac{4}{6}$ and $\frac{2}{4}$ → $\frac{4}{6}$ = ... , $\frac{2}{4}$ = ...

f) $\frac{3}{9}$ and $\frac{2}{6}$ → $\frac{3}{9}$ = ... , $\frac{2}{6}$ = ...

g) $\frac{1}{4}$ and $\frac{1}{8}$ → $\frac{1}{4}$ = ... , $\frac{1}{8}$ = ...

h) $\frac{3}{8}$ and $\frac{5}{6}$ → $\frac{3}{8}$ = ... , $\frac{5}{6}$ = ...

i) $\frac{1}{5}$ and $\frac{1}{3}$ → $\frac{1}{5}$ = ... , $\frac{1}{3}$ = ...

j) $\frac{4}{7}$ and $\frac{1}{2}$ → $\frac{4}{7}$ = ... , $\frac{1}{2}$ = ...

k) $\frac{3}{4}$ and $\frac{1}{7}$ → $\frac{3}{4}$ = ... , $\frac{1}{7}$ = ...

l) $\frac{3}{8}$ and $\frac{4}{9}$ → $\frac{3}{8}$ = ... , $\frac{4}{9}$ = ...

2 **Saleh has a piece of land, and he wants to grow $\frac{1}{3}$ of the land with flowers and $\frac{1}{2}$ with vegetables.**

How many parts will Saleh divide his land into?

How many parts of flowers and vegetables will he plant?

....

....

....

3 **Hussam owns an amount of money. He gave his son, Ali, $\frac{1}{2}$ of the money and gave his daughter, Samah, $\frac{1}{3}$ of the money.**

How many parts will Hussam divide that money into?

How many parts will each of Ali and Samah get?

....

....

....

Assessment on Lesson 1

Unit 7

1 Choose the correct answer:

a) $\frac{9}{4}$ is a/an ....

(proper fraction or improper fraction or mixed number or whole number)

b) $\frac{45}{60}$ = ... ($\frac{9}{12}$ or $\frac{15}{20}$ or $\frac{3}{4}$ or $\frac{5}{6}$)

c) $\frac{15}{30}$ = ... ($\frac{1}{2}$ or $\frac{3}{10}$ or $\frac{5}{6}$ or $\frac{1}{3}$)

d) $\frac{5}{6} + \frac{7}{6}$ = ... ($1\frac{1}{3}$ or $\frac{4}{3} + \frac{2}{3}$ or $\frac{1}{4} + \frac{5}{4}$ or $\frac{3}{2} + \frac{3}{2}$)

e) $5\frac{1}{6}$ = ... ($\frac{51}{6}$ or $1\frac{5}{6}$ or $\frac{12}{6}$ or $\frac{31}{6}$)

2 Complete the following:

a) $\frac{15}{3}$ = ...

b) $\frac{4}{5} = \frac{24}{.......}$

c) The smallest like denominator for the fractions $\frac{3}{4}$ and $\frac{1}{3}$ is ....

d) For both fractions $\frac{5}{6}$ and $\frac{3}{8}$ to have a like denominator, they should be:

$\frac{5}{6}$ = ... , $\frac{3}{8}$ = ...

e) $\frac{3}{8}$ + ... = $\frac{3}{4}$

3 Answer the following:

Emad has a piece of paper in the shape of a rectangle that he wants to divide into equal parts, so that he paints $\frac{1}{3}$ of the paper with red, $\frac{1}{6}$ of the paper with green, and $\frac{1}{2}$ of the paper with yellow.

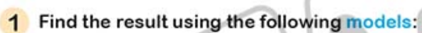
- How many parts does Emad need to divide the paper?

  Number of parts = ... parts.

- What fraction represents the part colored in each color after division?

  Red = $\frac{1}{3}$ = ... Green = $\frac{1}{6}$ = ... Yellow = $\frac{1}{2}$ = ...

Lessons 2–4



1 **Find the result using the following models:**

ⓐ $\frac{3}{4} + \frac{1}{8} =$ ....

ⓑ $\frac{3}{4} - \frac{1}{2} =$ ....

ⓒ $\frac{5}{6} + \frac{1}{3} =$ ....

ⓓ $\frac{1}{3} - \frac{1}{6} =$ ....

ⓔ $\frac{5}{8} + \frac{3}{4} =$ ....

ⓕ $\frac{4}{5} - \frac{7}{10} =$ ....

ⓖ $\frac{1}{2} + \frac{2}{3} =$ ....

ⓗ $\frac{1}{2} - \frac{3}{8} =$ ....

ⓘ $\frac{2}{3} + \frac{1}{4} =$ ....

ⓙ $\frac{3}{4} - \frac{1}{3} =$ ....

Theme 3

2 Find the result:

a) $\frac{3}{4} + \frac{5}{12}$ = ...

b) $\frac{15}{15} - \frac{2}{3}$ = ...

c) $\frac{7}{9} - \frac{1}{3}$ = ...

d) $\frac{1}{2} + \frac{11}{12}$ = ...

e) $\frac{5}{8} - \frac{1}{2}$ = ...

f) $\frac{7}{9} - \frac{2}{3}$ = ...

g) $\frac{6}{7} - \frac{3}{14}$ = ...

h) $\frac{5}{12} - \frac{7}{36}$ = ...

i) $\frac{4}{5} + \frac{3}{10}$ = ...

j) $\frac{2}{3} + \frac{17}{30}$ = ...

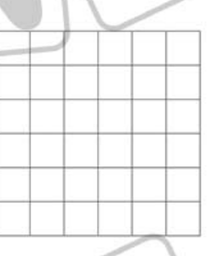
k) $\frac{3}{4} + \frac{1}{2} + \frac{5}{8}$ = ...

(l) $1 - \frac{1}{2} - \frac{1}{3}$ = ...

(m) $1 + \frac{4}{5} + \frac{3}{10}$ = ...

(n) $2 - \frac{7}{9} - \frac{1}{6}$ = ...

3 Abeer, Badr, Ehab, and Doha are making a quilt of 36 equal-sized fabric squares to represent flowering plants in Egypt. Abeer made squares for $\frac{11}{36}$ of the quilt's area.



Badr made squares for $\frac{1}{6}$ of the quilt's area.

What fraction of the quilt must Ehab make so that $\frac{1}{6}$ of the quilt's area will remain for Doha?

Represent the different squares needed for the given fractions of the quilt. Label the diagram and explain your thinking.

....

....

....

Assessment on Lessons 2 - 4

Unit 7

1 Complete the following:

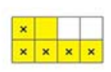
a) $\frac{3}{4} = \frac{9}{\ldots\ldots}$

b) $\frac{14}{28} = \ldots\ldots\ldots$ (In the simplest form)

c) For both fractions $\frac{3}{8}$ and $\frac{2}{3}$ to have a like denominator, they should be:

$\frac{3}{8} = \ldots\ldots\ldots$, $\frac{2}{3} = \ldots\ldots\ldots$

d) The subtraction operation represented on the opposite model is $\frac{3}{4} - \ldots\ldots = \ldots\ldots$.



2 Find the result:

a) $\frac{2}{5} + \frac{3}{10} = \ldots\ldots\ldots\ldots\ldots\ldots$

b) $\frac{1}{2} - \frac{1}{8} = \ldots\ldots\ldots\ldots\ldots\ldots$

c) $\frac{4}{5} + \frac{1}{2} = \ldots\ldots\ldots\ldots\ldots\ldots$

d) $\frac{2}{3} - \frac{1}{4} = \ldots\ldots\ldots\ldots\ldots\ldots$

3 Answer the following:

Hana has a pie. She gave $\frac{1}{4}$ of the pie to her sister, Samah, and she gave $\frac{1}{3}$ of the pie to her brother, Adel, then she took the rest.

What fraction represents the part that Hana took?

Explain your answer using the model shown.

....

....

Assessment on Concept 1

Unit 7

First: **Choose the correct answer:**

1. The fraction $\frac{4}{7}$ is close to ………………………… . ($1\frac{1}{2}$ or 1 or $\frac{1}{2}$ or 0)

2. $\frac{5}{6} - \frac{1}{3} =$ ………………………… ($\frac{1}{2}$ or $\frac{6}{9}$ or $\frac{4}{6}$ or $\frac{4}{2}$)

3. $\frac{3}{4} + \frac{1}{6} =$ ………………………… ($\frac{11}{12}$ or $\frac{3}{12}$ or $\frac{4}{12}$ or $\frac{4}{10}$)

4. $\frac{23}{11} =$ ………………………… ($2\frac{1}{3}$ or $3\frac{2}{11}$ or $2\frac{1}{11}$ or $2\frac{3}{12}$)

5. $\frac{3}{5} = \frac{\dots}{25}$ (30 or 25 or 15 or 35)

Second: **Complete the following:**

1. $\frac{8}{9} - \frac{1}{3}$ …………………………

2. The addition operation represented on the opposite models is:

$\frac{\dots}{\dots} + \frac{\dots}{\dots} = \frac{\dots}{\dots}$

3. $\frac{1}{5} +$ ………………………… $= \frac{1}{2}$

4. ………………………… $- \frac{1}{4} = \frac{3}{8}$

5. $\frac{15}{30} = \frac{\dots}{2}$

Third: **Answer the following:**

- Hana has $\frac{7}{8}$ kilogram of flour. She used $\frac{1}{2}$ kilogram to make pancakes, and $\frac{1}{4}$ kilogram to make bread. How much flour does she have left?

……………………………………………………………………………………

……………………………………………………………………………………

Assessment 1 on

First: **Choose the correct answer:**

1. $\frac{35}{45} = \frac{\cdots}{\cdots}$ $\left(\frac{7}{5} \text{ or } \frac{5}{7} \text{ or } \frac{7}{9} \text{ or } \frac{5}{9}\right)$
2. $\frac{24}{48} = \frac{\cdots}{\cdots}$ (In the simplest form) $\left(\frac{1}{2} \text{ or } \frac{2}{4} \text{ or } \frac{3}{6} \text{ or } \frac{4}{8}\right)$
3. $\frac{3}{5} + \frac{3}{5} = \cdots\cdots$ $\left(\frac{3}{5} \text{ or } \frac{6}{5} \text{ or } \frac{3}{10} \text{ or } \frac{6}{10}\right)$
4. The smallest like denominator for the fractions $\frac{1}{3}$ and $\frac{3}{4}$ is ……… . (48 or 36 or 24 or 12)
5. $\frac{12}{48} = \frac{\cdots}{12}$ (48 or 1 or 3 or 4)

Second: **Complete the following:**

1. $\frac{5}{9} = \frac{45}{\cdots}$
2. $\frac{1}{3}$ of 21 is ……… .
3. $\frac{3}{8} + \frac{1}{6} = \cdots\cdots$
4. $\frac{5}{9} - \frac{1}{2} = \cdots\cdots$
5. $\frac{1}{2} + \cdots\cdots = \frac{3}{4}$

Third: **Answer the following:**

- Sameh bought $\frac{1}{3}$ kilogram of flour, and $\frac{1}{4}$ kilogram of sugar. What is the total mass of what Sameh bought?

……………………………………………………………

……………………………………………………………

Assessment 2 on

First: **Complete the following:**

1. $\frac{36}{60} = \text{.......}$ (In the simplest form)

2. $\frac{\text{....}}{5} = \frac{12}{15}$

3. $\frac{6}{9} - \frac{5}{9} = \text{.......}$

4. $\frac{2}{3} + \frac{2}{3} = \text{.......}$

5. $3\frac{2}{7} = \frac{\text{....}}{7}$

Second: **Choose the correct answer:**

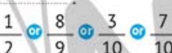
1. $\frac{3}{8} + \frac{3}{8} = \text{.......}$ ($\frac{3}{8}$ or $\frac{3}{16}$ or $\frac{3}{4}$ or $\frac{6}{16}$)

2. $\frac{1}{5} + \text{.......} = \frac{1}{2}$ ($\frac{1}{3}$ or $\frac{2}{7}$ or $\frac{3}{10}$ or $\frac{1}{5}$)

3. $\frac{24}{36} = \text{.......}$ ($\frac{1}{2}$ or $\frac{8}{9}$ or $\frac{4}{3}$ or $\frac{2}{4}$)

4. The result of the subtraction process represented on the opposite model is ....

×	×			
×	×	×		



($\frac{1}{2}$ or $\frac{8}{9}$ or $\frac{3}{10}$ or $\frac{7}{10}$)

Third: **Answer the following:**

1. Find the result in the simplest form:

   a. $\frac{3}{4} + \frac{5}{6} = \text{.......}$

   b. $\frac{1}{2} - \frac{1}{6} = \text{.......}$

2. Write three fractions that are equivalent to the fraction $\frac{3}{5}$:

$$\frac{3}{5} = \frac{\text{....}}{\text{....}} = \frac{\text{....}}{\text{....}} = \frac{\text{....}}{\text{....}}$$

Unit 8 Adding and Subtracting Mixed Numbers

Concept 8.1 Working with Mixed Numbers

Lesson 1

1 Rewrite each of the values shown in two different forms:

ⓐ $\frac{12}{5}$ = ... = ...

ⓑ $\frac{18}{7}$ = ... = ...

ⓒ $\frac{9}{4}$ = ... = ...

ⓓ $\frac{16}{5}$ = ... = ...

ⓔ $\frac{18}{6}$ = ... = ...

ⓕ $\frac{6}{3}$ = ... = ...

ⓖ $3\frac{4}{5}$ = ... = ...

ⓗ $1\frac{6}{5}$ = ... = ...

ⓘ $2\frac{2}{7}$ = ... = ...

ⓙ $2\frac{5}{3}$ = ... = ...

2 Find the result using the strategy you prefer. Simplify, if possible:

ⓐ $2\frac{3}{8} + 3\frac{1}{8}$ = ...

ⓑ $4\frac{5}{6} + 3\frac{1}{6}$ = ...

ⓒ $1\frac{2}{3} + 2\frac{2}{3}$ = ...

ⓓ $5\frac{3}{7} - 2\frac{1}{7}$ = ...

ⓔ $4\frac{3}{8} - 1\frac{5}{8}$ = ...

ⓕ $8\frac{1}{5} - 4\frac{3}{5}$ = ...

ⓖ $4 - \frac{2}{3}$ = ...

3 Find the value of the variable in each equation:

a. $3\frac{1}{5} + a = 5\frac{4}{5}$ ⟶ a = ……………………

b. $b + 3\frac{1}{4} = 5$ ⟶ b = ……………………

c. $4\frac{2}{3} - c = 2\frac{1}{3}$ ⟶ c = ……………………

d. $4\frac{2}{8} - d = 2\frac{1}{8}$ ⟶ d = ……………………

e. $e - 3\frac{4}{7} = 4\frac{1}{7}$ ⟶ e = ……………………

f. $2\frac{1}{4} + f = 5\frac{3}{4}$ ⟶ f = ……………………

g. $g - 2\frac{3}{4} = 2\frac{3}{4}$ ⟶ g = ……………………

4 Complete:

a. $3\frac{4}{5} = \frac{\dots}{\dots}$

b. $\frac{15}{7} = \dots \frac{\dots}{\dots}$

c. $2\frac{1}{5} = 1\frac{\dots}{\dots}$

d. $3\frac{7}{5} = 4\frac{\dots}{\dots}$

e. $\frac{3}{3} + \frac{3}{3} + \frac{3}{3} = 1\frac{\dots}{\dots}$

f. $2\frac{1}{4} = \frac{\dots}{4} + \frac{\dots}{4} + \frac{\dots}{4}$

g. $5 - \dots = 3\frac{1}{4}$

h. $\dots - \frac{7}{8} = \frac{6}{8}$

i. $\dots + 3\frac{3}{4} = 8$

j. $1\frac{1}{2} + \dots = 3$

Assessment on Lesson 1

Unit 8

1 Complete the following:

a) $3\frac{5}{3} = \frac{\dots}{3}$

b) $\frac{15}{3} = 2\frac{\dots}{\dots}$

c) $2\frac{4}{5} + \dots\dots = 3\frac{1}{5}$

d) $\frac{14}{28} = \frac{\dots}{4}$

e) $\frac{3}{8} + \frac{1}{6} = \dots\dots$

2 Choose the correct answer:

a) $3\ \frac{1}{6} - 2\ \frac{3}{6} = \dots\dots$ ($\frac{4}{6}$ or $5\ \frac{2}{6}$ or $1\ \frac{4}{6}$ or $1\ \frac{2}{6}$)

b) $\frac{45}{60} = \dots\dots$ (In the simplest form) ($\frac{5}{6}$ or $\frac{15}{20}$ or $\frac{9}{12}$ or $\frac{3}{4}$)

c) $3\ \frac{3}{4} = \dots\dots$ ($1\ \frac{8}{4}$ or $2\ \frac{7}{4}$ or $4\ \frac{1}{4}$ or $\frac{10}{4}$)

d) $5 - 3\ \frac{1}{2} = \dots\dots$ ($1\ \frac{1}{2}$ or $1\ \frac{2}{2}$ or $8\ \frac{1}{2}$ or $2\ \frac{1}{2}$)

e) $\frac{15}{4} = \dots\dots$ ($2\ \frac{3}{4}$ or $3\ \frac{1}{4}$ or $1\ \frac{11}{4}$ or $1\ \frac{5}{4}$)

3 Answer the following:

a) Naji and his brother participated in harvesting the cotton crop, and there were 10 square meters of cotton needed to be harvested. Naji and his brother were able to harvest $3\ \frac{3}{4}$ from the cotton.
How many square meters of cotton are remaining?

....

....

b) Find ($4\ \frac{1}{5}$) in 4 other forms:

$4\ \frac{1}{5} = \dots\dots = \dots\dots = \dots\dots = \dots\dots$

1 Rewrite the following mixed numbers using a like denominator in two different ways:

ⓐ $5\frac{15}{27}$, $10\frac{5}{6}$

First Way

$5\frac{15}{27}$ = ... , $10\frac{5}{6}$ = ...

Second Way

$5\frac{15}{27}$ = ...

$10\frac{5}{6}$ = ...

ⓑ $1\frac{4}{10}$, $1\frac{2}{4}$

First Way

$1\frac{4}{10}$ = ... , $1\frac{2}{4}$ = ...

Second Way

$1\frac{4}{10}$ = ...

$1\frac{2}{4}$ = ...

ⓒ $2\frac{4}{6}$, $3\frac{8}{8}$

First Way

$2\frac{4}{6}$ = ... , $3\frac{8}{8}$ = ...

Second Way

$2\frac{4}{6}$ = ...

$3\frac{8}{8}$ = ...

(d) $3\frac{10}{24}$, $3\frac{24}{48}$

First Way

$3\frac{10}{24}$ = ... , $3\frac{24}{48}$ = ...

Second Way

$3\frac{10}{24}$ = ...

$3\frac{24}{48}$ = ...

(e) $3\frac{10}{16}$, $33\frac{9}{12}$

First Way

$3\frac{10}{16}$ = ... , $33\frac{9}{12}$ = ...

Second Way

$3\frac{10}{16}$ = ...

$3\frac{9}{12}$ = ...

(f) $3\frac{6}{8}$, $3\frac{5}{10}$

First Way

$3\frac{6}{8}$ = ... , $3\frac{5}{10}$ = ...

Second Way

$3\frac{6}{8}$ = ...

$3\frac{5}{10}$ = ...

g $2\frac{3}{12}$, $2\frac{4}{8}$

First Way

$2\frac{3}{12}$ = ... , $2\frac{4}{8}$ = ...

Second Way

$2\frac{3}{12}$ = ...

$2\frac{4}{8}$ = ...

h $3\frac{4}{10}$, $1\frac{4}{6}$

First Way

$3\frac{4}{10}$ = ... , $1\frac{4}{6}$ = ...

Second Way

$3\frac{4}{10}$ = ...

$1\frac{4}{6}$ = ...

2 Estimate the following by using like denominators:

a $3\frac{5}{10}$ = ...

b $3\frac{18}{81}$ = ...

c $5\frac{3}{18}$ = ...

Assessment on Lesson 2

Unit 8

1 Choose the correct answer:

ⓐ The mixed numbers $2\frac{5}{10}$ and $3\frac{6}{9}$ by using a like denominator are .... and ....

($2\frac{3}{6}, 3\frac{4}{6}$ or $2\frac{6}{12}, 3\frac{6}{9}$ or $2\frac{1}{2}, 3\frac{2}{3}$ or $2\frac{1}{5}, 3\frac{1}{3}$)

ⓑ $\frac{7}{8} + \frac{5}{8} =$ .... ($\frac{12}{16}$ or $\frac{2}{8}$ or $\frac{3}{2}$ or $\frac{8}{12}$)

ⓒ The LCM of 8 and 6 is .... (48 or 18 or 16 or 24)

ⓓ $\frac{25}{7} =$ .... ($4\frac{3}{7}$ or $3\frac{4}{7}$ or $2\frac{5}{7}$ or $1\frac{15}{7}$)

ⓔ $3\frac{8}{3} =$ .... ($4\frac{5}{3}$ or $4\frac{7}{3}$ or $2\frac{9}{3}$ or $\frac{27}{3}$)

2 Complete the following:

ⓐ $3\frac{1}{2} +$ .... $= 4$

ⓑ $4\frac{3}{4} = 3\frac{....}{4}$

ⓒ $\frac{15}{45} =$ .... (In the simplest form)

ⓓ The smallest like denominator of $\frac{8}{12}$ and $\frac{5}{10}$ is ....

ⓔ $\frac{48}{60} =$ .... (In the simplest form)

3 Wrire the following mixed numbers by using:

ⓐ $3\frac{2}{6} =$ ....

ⓑ $8\frac{6}{8} =$ ....

ⓒ $7\frac{5}{10} =$ ....

Assessment on Concept 1

First: Choose the correct answer:

1. $4\frac{5}{7}$ = ... ($\frac{45}{7}$ or $\frac{28}{7}$ or $2\frac{7}{7}$ or $3\frac{12}{7}$)

2. $\frac{25}{8}$ = ... ($1\frac{1}{8}$ or $3\frac{5}{8}$ or $2\frac{9}{8}$ or $2\frac{5}{8}$)

3. $8\frac{1}{2} = 8\frac{\dots}{16}$. (4 or 8 or 2 or 1)

4. $3\frac{1}{4}$ + ... $= 5\frac{1}{2}$ ($1\frac{1}{2}$ or $2\frac{1}{2}$ or $1\frac{1}{4}$ or $2\frac{1}{4}$)

5. $7\frac{1}{6}$ − .... $= 2\frac{1}{2}$ ($4\frac{4}{6}$ or $5\frac{4}{6}$ or $5\frac{2}{6}$ or $4\frac{2}{6}$)

Second: Complete the following:

1. $\frac{13}{5} = 1\frac{\dots}{5} = 2\frac{\dots}{5}$

2. $4\frac{3}{7} = \frac{\dots}{\dots}$

3. $5\frac{1}{8} + 3\frac{5}{8}$ = ... (In the simplest form)

4. $7\frac{3}{5} - \frac{4}{5}$ = ...

5. $\frac{15}{20}$ = ... , $\frac{12}{18}$ = ... (Using the smallest like denominator)

Third: Answer the following:

- Ahmed had 10 pounds, he bought a pen for $4\frac{3}{4}$ pounds , and an eraser for $2\frac{3}{4}$ pounds. How much money is left with Ahmed?

....

....

Concept 8.2 Adding and Subtracting Mixed Numbers with Unlike Denominators

Lesson 3

1 **Add** using the following models:

a) $2\frac{1}{3} + 2\frac{1}{2} = $ ....

b) $3\frac{1}{4} + 1\frac{1}{2} = $ ....

c) $2\frac{2}{3} + 1\frac{3}{4} = $ ....

d) $1\frac{4}{5} + 1\frac{1}{2} = $ ....

e) $2\frac{1}{8} + \frac{3}{4} = $ ....

f) $1\frac{1}{6} + 1\frac{5}{12} = $ ....

2 **Subtract using the following models:**

ⓐ $3\frac{1}{2} - 2\frac{1}{4} =$ ....

ⓑ $2\frac{4}{5} - 1\frac{1}{2} =$ ....

ⓒ $3\frac{3}{4} - \frac{2}{8} =$ ....

ⓓ $3\frac{1}{3} - 2\frac{1}{2} =$ ....

ⓔ $4 - 3\frac{1}{4} =$ ....

ⓕ $4\frac{3}{4} - 2\frac{5}{6} =$ ....

3 **Subtract using the following number lines:**

ⓐ $4\frac{1}{2} - 2\frac{1}{5} =$ ....

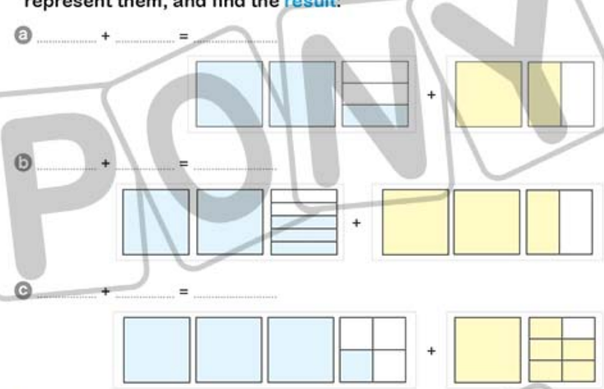
ⓑ $3\frac{1}{4} - 1\frac{1}{5} =$ ....

ⓒ $6\frac{1}{3} - 3\frac{3}{4} =$ ....

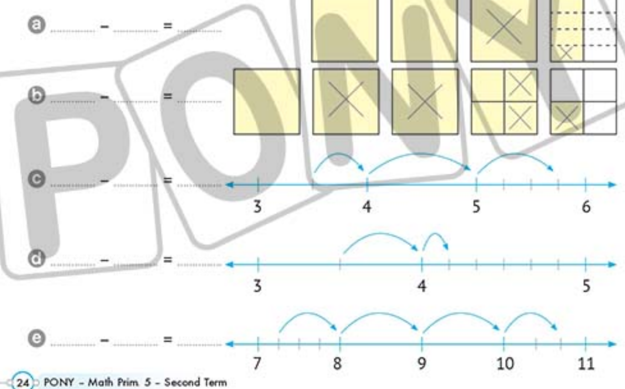
3 4 5 6 7

ⓓ $9\frac{3}{5} - 7\frac{1}{2} =$ ....

4 Study the following models, then write the addition problems that represent them, and find the result:



5 Study the following models, then write the subtraction problems that represent them, and find the result:



Assessment on Lesson 3

Unit 8

1 Choose the correct answer:

ⓐ The subtraction problem that represents the following model is ....

($1\frac{3}{8} - 1\frac{1}{2}$ or $1\frac{1}{2} - 1\frac{3}{8}$ or $2\frac{1}{2} - 1\frac{3}{8}$ or $2\frac{3}{8} - 1\frac{1}{2}$)

ⓑ The subtraction problem that represents the following number line is ....

($4\frac{2}{3} - 3\frac{3}{4}$ or $4\frac{1}{3} - 3\frac{1}{4}$ or $4\frac{2}{3} - 3\frac{1}{4}$ or $4\frac{3}{4} - 3\frac{1}{3}$)

ⓒ The addition problem that represents the following model is ....

($1\frac{1}{3} + 1\frac{2}{3}$ or $1\frac{1}{3} + 1\frac{1}{2}$ or $1\frac{2}{3} + 1\frac{1}{2}$ or $1\frac{2}{3} + 1\frac{3}{6}$)

ⓓ $\frac{5}{8} + \frac{3}{4} =$ .... ($\frac{1}{8}$ or $\frac{8}{12}$ or $1\frac{3}{8}$ or $\frac{8}{8}$)

ⓔ $3\frac{1}{4} + 2\frac{3}{4} =$ .... ($1\frac{1}{4}$ or $5\frac{1}{2}$ or 6 or 5)

2 Complete:

ⓐ $\frac{15}{18} = \frac{5}{\dots}$

ⓑ $2\frac{6}{5} = 3\frac{\dots}{\dots}$

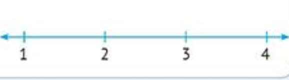
ⓒ $2\frac{3}{2} = \frac{\dots}{\dots}$

ⓓ $3\frac{3}{4} + 1\frac{3}{4} =$ ....

ⓔ $4\frac{1}{3} - 2\frac{3}{4} =$ ....

3 Subtract using the following number line:

$3\frac{1}{5} - 1\frac{1}{4} =$ ....



Lessons 4&5

1 **Evaluate each sum or difference using any strategy you prefer, and then evaluate.** **(Simplify, if possible)**

a) $3\frac{4}{5} + 2\frac{2}{3}$ = ...

b) $4\frac{3}{4} + 9\frac{5}{12}$ = ...

c) $2\frac{1}{4} + 1\frac{11}{16}$ = ...

d) $5\frac{7}{10} + 8\frac{3}{4}$ = ...

e) $1\frac{2}{3} + 1\frac{15}{24}$ = ...

f) $4\frac{1}{4} - 2\frac{5}{6}$ = ...

g) $9\frac{1}{6} - 3\frac{1}{3}$ = ...

h) $1\frac{2}{3} - 1\frac{3}{5}$ = ...

i) $9\frac{1}{10} - 5\frac{7}{12}$ = ...

j) $5\frac{1}{3} - 2\frac{4}{5}$ = ...

2 **Find the missing number using any strategy. Simplify, if possible:**

ⓐ $9\frac{5}{20} - a = 4\frac{19}{20}$ ⟶ a = ...

ⓑ $b - 4\frac{7}{8} = 4\frac{37}{40}$ ⟶ b = ...

ⓒ $15\frac{1}{4} - c = 8\frac{5}{8}$ ⟶ c = ...

ⓓ $d - 3\frac{1}{3} = 2\frac{1}{6}$ ⟶ d = ...

ⓔ $e + 9\frac{1}{4} = 12\frac{15}{16}$ ⟶ e = ...

ⓕ $4\frac{12}{18} + f = 11$ ⟶ f = ...

ⓖ $g + 3\frac{1}{5} = 6\frac{1}{2}$ ⟶ g = ...

ⓗ $5\frac{2}{3} + h = 9\frac{3}{4}$ ⟶ h = ...

3 **Complete:**

ⓐ $2\frac{3}{8} + 1\frac{3}{4}$ = ... + ... = ... + $\frac{2}{8} + 1\frac{6}{8}$

= .... + 2 = ...

ⓑ $\frac{5}{6} + \frac{1}{3}$ = ... + ... = ... + ... + $\frac{1}{6}$

= .... + ... = ...

ⓒ $4\frac{7}{8} + 2\frac{1}{2}$ = ... + ... = $4\frac{7}{8} + \frac{1}{8}$ + ...

= .... + ... = ...

ⓓ $3\frac{1}{2} + 1\frac{8}{9}$ = ... + ... = ... + ... + ...

= .... + 2 = ...

e) $4\frac{7}{10} - 2\frac{9}{16} = 4\frac{56}{80} - 2\frac{45}{80}$ = (........ + ...) – (........ + ...)

= .... – .... = ...

f) $5\frac{1}{3} - 1\frac{5}{6}$ = ... – .... = (........ + ...) – (........ + ...)

= .... – 2 = ...

g) $6\frac{1}{4} - 3\frac{1}{2}$ = ... – .... = (........ + ...) – (........ + ...)

= .... – .... = ...

h) $8\frac{3}{5} - 2\frac{3}{5}$ = (........ + ...) – (........ + ...)

= .... – .... = ...

4 **Complete:**

a) $1\frac{3}{5} + 2\frac{2}{3} = 1\frac{4}{15}$ + ...

b) $3\frac{5}{8} + 2\frac{1}{2} = 4$ + ...

c) $1\frac{3}{4} + 2\frac{1}{2} = 5$ – ....

d) .... $- 3 = 1\frac{1}{4} + 2\frac{1}{3}$

e) $5\frac{3}{4}$ – .... $= 2\frac{1}{8} + 1\frac{1}{2}$

5 **Wael collected $4\frac{3}{4}$ kilograms of dates. He gave $2\frac{1}{5}$ kg to his friend. He wants to know how many kilograms are left.**

....

....

6 **Asmaa bought a book for $9\frac{3}{4}$ pounds and a pen for $2\frac{1}{2}$ pounds. How much money did Asmaa pay?**

....

....

Assessment on Lessons 4&5

Unit 8

1 Choose the correct answer:

a) $\frac{3}{5} + \frac{9}{10} =$ .... $+ 1$ $\left(\frac{1}{10} \text{ or } \frac{1}{2} \text{ or } \frac{1}{5} \text{ or } \frac{2}{5}\right)$

b) $1\frac{4}{5} + 2\frac{1}{3} =$ .... $\left(4\frac{2}{15} \text{ or } 3\frac{2}{15} \text{ or } 4\frac{5}{8} \text{ or } 3\frac{5}{8}\right)$

c) $3\frac{1}{2} -$ .... $= 1\frac{3}{8}$ $\left(2\frac{5}{8} \text{ or } 1\frac{1}{8} \text{ or } 1\frac{5}{8} \text{ or } 2\frac{1}{8}\right)$

d) $3\frac{5}{4} =$ .... $\left(1\frac{15}{4} \text{ or } 2\frac{7}{4} \text{ or } 4\frac{1}{4} \text{ or } \frac{15}{4}\right)$

e) $3\frac{5}{6} + 1\frac{1}{3} = 4 +$ .... $\left(2 \text{ or } 1\frac{1}{6} \text{ or } 1\frac{2}{6} \text{ or } 1\frac{2}{3}\right)$

2 Complete:

a) .... $- 1\frac{2}{3} = 2\frac{1}{2}$

b) $\frac{15}{7} = 1\frac{\dots}{7}$

c) $2\frac{1}{2} - 1\frac{7}{8} =$ .... $- 2$

d) $\frac{15}{20} = \frac{\dots}{4}$

e) $2\frac{1}{3} + 1\frac{1}{4} = \frac{\dots}{3} + \frac{\dots}{4} = \frac{\dots}{12} + \frac{\dots}{12} =$ ....

3 Answer the following:

a) Hana had $15\frac{1}{2}$ pounds, she bought a ruler for $4\frac{1}{4}$ pounds and a pen for $5\frac{1}{2}$ pounds. What is the remaining amount with Hana?

....

....

b) Rewrite the mixed number $4\frac{3}{5}$ in four different ways.

$4\frac{3}{5} =$ .... $=$ .... $=$ .... $=$ ....

Theme 3

Lesson 6 Story Problems with Mixed Numbers

1 **Complete:**

a) $2\frac{1}{4}$ minutes = (............ X ....) + ... = ... seconds.

b) $3\frac{1}{10}$ hours = (............ X ....) + ... = ... minutes.

c) $4\frac{2}{3}$ years = (............ X ....) + ... = ... months.

d) 5 minutes + 40 seconds = ... minutes.

e) 4 hours + 15 minutes = ... hours.

f) 3 years + 3 months = ... years.

g) $1\frac{3}{4}$ minutes = ... seconds.

h) 150 seconds = ... minutes.

i) $2\frac{1}{3}$ hours = ... minutes.

j) 90 minutes = ... hours.

k) $2\frac{1}{4}$ years = ... months.

l) 30 months = ... years.

2 **Habiba is planting three plume thistle plants. It took her $\frac{5}{6}$ minute to plant the first one. The second plant took $\frac{1}{12}$ minute longer to plant than the first one. The third plant took $\frac{1}{12}$ less time to plant than the second one. How long did it take to plant the third plume thistle?**

....

....

....

3 **Ola baked 4 identical basbousa pans for a celebration. Knowing that some guests like basbousa more than others, she cut each basbousa differently. When the celebration was over, she noticed there was some basbousa left in each pan. There was $\frac{1}{3}$ left in one pan, and $\frac{1}{6}$ remained in another. Another pan had $\frac{5}{12}$ remaining, and $\frac{1}{4}$ was uneaten.**

a) What is the total amount of basbousa left?

....

b) How much basbousa was eaten at the celebration?

....

c) Which of the four pans had the least basbousa left?

....

d) Ola wants to put the remaining basbousa in one pan. Will it fit? Why or why not?

....

4 **On Monday, Afaf spent $5\frac{2}{3}$ hours researching papyrus plants for her presentation. The next day, she spent $\frac{11}{12}$ of an hour less putting her presentation together. Over both days, how many hours did Afaf spend on her presentation?**

....

....

5 **Write a story problem that is reasonable for this pair of mixed numbers. Then, solve your problem.**

$$3\frac{1}{8} + 2\frac{1}{3}$$

....

....

Assessment on Lesson 6

Unit 8

1 Complete the following:

a) $3\frac{1}{2}$ hours = ... minutes.

b) 18 months = ... years.

c) $\frac{45}{60}$ = ... (In the simplest form)

d) $3\frac{7}{5} = \frac{\dots}{5}$

e) $5\frac{3}{8} = 4\frac{\dots}{8}$.

2 Choose the correct answer:

a) 2 hours and a half = ... minutes. (150 or 140 or 135 or 120)

b) A year and a fourth = ... months. (12 or 16 or 15 or 12)

c) $\frac{24}{5}$ = ... ($4\frac{2}{5}$ or $3\frac{9}{5}$ or $2\frac{4}{5}$ or $1\frac{9}{5}$)

d) $4\frac{8}{9} + \frac{1}{3}$ = ... $+ \frac{2}{9}$ ($5\frac{2}{3}$ or 5 or 4 or 3)

e) $3\frac{1}{2} - 2\frac{3}{4}$ = ... ($1\frac{3}{4}$ or $\frac{3}{4}$ or $6\frac{1}{4}$ or $5\frac{1}{4}$)

3 Answer the following:

Jalal spends $2\frac{1}{4}$ hours studying Arabic and 30 minutes more studying mathematics. How much time does Jalal spend studying mathematics and Arabic?

....

....

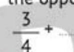
....

Assessment on Concept 2

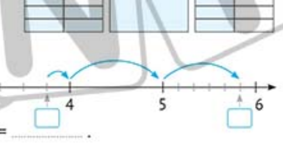
Unit 8

First: **Complete the following:**

1. The addition problem representing the opposite model is:



$\frac{3}{4}$ + ... = ...



2. The subtraction problem represented on the opposite number line is .... − .... = ...

3. $2\frac{3}{8} - 1\frac{3}{4} =$ .... $- 2$

4. $2\frac{8}{9} +$ .... $= 5\frac{1}{3}$

5. $3\frac{1}{6}$ hours = ... minutes.

Second: **Find the result:**

1. $2\frac{4}{5} + 3\frac{1}{2} =$ ....

2. $7\frac{3}{4} - 3\frac{1}{3} =$ ....

3. $4\frac{1}{2} - 2\frac{5}{6} =$ ....

Third: **Answer the following:**

- Ahmed runs for $3\frac{1}{4}$ hours a day, and Heba runs for 45 minutes less than Ahmed. What is the total time they both spent running? Find the time in hours, then in minutes.

....

....

....

....

Assessment 1 on Unit 8

First: Choose the correct answer:

1. $8\frac{3}{4} - 2\frac{1}{4} = \text{.........}$ $(7\frac{1}{4}$ or 7 or $6\frac{3}{4}$ or $6\frac{1}{2})$
2. $3\frac{1}{2} = 3\frac{\text{...}}{8}$. $(4$ or 7 or 28 or $2)$
3. $5\frac{13}{7} = \text{.........}$ $(3\frac{20}{7}$ or $4\frac{18}{7}$ or $6\frac{6}{7}$ or $6\frac{3}{7})$
4. $5\frac{3}{5} - 1\frac{3}{4} = \text{.........} - 2$ $(4\frac{7}{20}$ or $4\frac{3}{5}$ or $5\frac{2}{5}$ or $5\frac{17}{20})$
5. 130 minutes = ... hours. $(2\frac{1}{6}$ or $2\frac{1}{2}$ or $2\frac{1}{4}$ or $2\frac{1}{3})$

Second: Complete the following:

1. 2 minutes and half = ... seconds.
2. 1 month = ... year.
3. $\frac{13}{5} = 1\frac{\text{...}}{\text{...}} = 2\frac{\text{...}}{\text{...}}$
4. $5\frac{3}{4} + \text{.........} = 7\frac{1}{6}$
5. $3\frac{1}{2} + 1\frac{1}{3} = \text{...}\frac{\text{...}}{\text{...}} + \text{...}\frac{\text{...}}{\text{...}} = \frac{\text{...}}{\text{...}} + \frac{\text{...}}{\text{...}} = \frac{\text{...}}{\text{...}} = \text{...}\frac{\text{...}}{\text{...}}$

Third: Answer the following:

- Hala spends 5 hours in the club; $2\frac{1}{2}$ hours in swimming practice, $1\frac{1}{3}$ hours in running practice, and she takes a break between both practices. How long does Hala spend resting in hours and minutes?

....

....

....

Assessment 2 on

First: **Complete the following:**

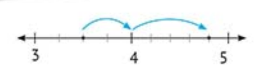
1. $\frac{15}{4} = 2 \frac{\ldots}{\ldots}$

2. $2\frac{3}{8} - \ldots\ldots = \frac{7}{8}$

3. $2\frac{1}{3}$ and $8\frac{3}{4}$ using the smallest like denominator are .... , ...

4. $2\frac{3}{4} + 1\frac{1}{2} = \ldots\ldots - 5\frac{3}{4}$

5. The subtraction problem represented on the opposite number line is .... − .... = ...



Second: **Choose the correct answer:**

1. A year and 3 months = ... years. $(1\frac{1}{12}$ or $1\frac{1}{2}$ or $1\frac{1}{3}$ or $1\frac{1}{4})$

2. $3\frac{4}{6}$ and $2\frac{2}{4}$ using the smallest like denominator are .... , ...
   $(3\frac{4}{6}, 2\frac{2}{6}$ or $3\frac{4}{6}, 2\frac{3}{6}$ or $3\frac{3}{4}, 2\frac{2}{4}$ or $3\frac{2}{3}, 2\frac{1}{2})$

3. $3 - 1\frac{1}{2} = 2\frac{3}{4} - \ldots\ldots$ $(\frac{3}{4}$ or $\frac{1}{4}$ or $1\frac{1}{2}$ or $1\frac{1}{4})$

4. $5\frac{7}{9} = 4\frac{\ldots}{9}$ (52 or 25 or 16 or 7)

Third: **Answer the following:**

- Ahmed has three children. The middle child is $4\frac{1}{2}$ years old, the eldest is $1\frac{1}{3}$ years older than the middle child and the youngest is $1\frac{1}{4}$ years younger than the middle child. What is the sum of the ages of the three children? ....
....
....

Unit 9 Multiplying and Dividing Fractions

Concept 9.1 Multiplying Fractions and Mixed Numbers

Lesson 1

1 **Find the product. Simplify your answers, if possible:**

a) $\frac{3}{4} \times 5$ = ...

b) $\frac{2}{7} \times 3$ = ...

c) $\frac{2}{3} \times 9$ = ...

d) $\frac{5}{6} \times 2$ = ...

e) $\frac{3}{4} \times 6$ = ...

f) $\frac{5}{8} \times 4$ = ...

g) $1\frac{1}{2} \times 3$ = ... = ...

h) $2\frac{1}{4} \times 4$ = ... = ...

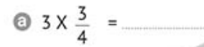
i) $3\frac{4}{5} \times 5$ = ... = ...

j) $2\frac{1}{3} \times 8$ = ... = ...

k) $8\frac{1}{2} \times 4$ = ... = ...

l) $4\frac{3}{5} \times 10$ = ... = ...

2 Complete and simplify your answers, if possible:



ⓐ $3 \times \frac{3}{4}$ = ... + ... + ... = ...

ⓑ .... × .... = $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$ = ...

ⓒ $\frac{5}{8} \times 5$ = ... = ...

ⓓ $1\frac{3}{4} \times 4$ = ... + ... + ... + ... = ...

ⓔ .... X .... $= 1\frac{3}{5} + 1\frac{3}{5} + 1\frac{3}{5} + 1\frac{3}{5} + 1\frac{3}{5}$ = ...

ⓕ $4\frac{3}{4} \times 3$ = ... = ...

3 Using the number lines shown, then find the product:

ⓐ $\frac{2}{3} \times 4$ = ...

0 1 2 3

ⓑ $\frac{3}{5} \times 3$ = ...

0 1 2

ⓒ $4 \times 1\frac{1}{4}$ = ...

0 1 2 3 4 5

ⓓ $2\frac{1}{2} \times 5$ = ...

0 1 2 3 4 5 6 7 8 9 10 11 12 13

ⓔ $3\frac{2}{3} \times 2$ = ...

0 1 2 3 4 5 6 7 8

4 Using the models shown, find the product:

a) $\frac{3}{4} \times 3 =$ ....

b) $4 \times \frac{4}{5} =$ ....

c) $\frac{1}{2} \times 5 =$ ....

d) $4 \times \frac{2}{3} =$ ....

e) $1\frac{3}{5} \times 3 =$ ....

f) $2\frac{3}{4} \times 4 =$ ....

5 Write two different multiplication expressions that have the same product:

a) $4 \times \frac{5}{6}$ = ... X .... = ... X ....

b) $\frac{3}{7} \times 4$ = ... X .... = ... X ....

c) $\frac{4}{5} \times 6$ = ... X .... = ... X ....

d) $\frac{8}{9} \times 6$ = ... X .... = ... X ....

e) $\frac{5}{3} \times 8$ = ... X .... = ... X ....

6 **Complete the input–output tables. Simplify your answers, if possible:**

① Rule (X $\frac{9}{10}$)

	Input	Output
a	2	
b	4	
c	6	
d	8	

② Rule (X $10\frac{1}{4}$)

	Input	Output
a	2	
b	3	
c	4	
d	5	

③ Rule (X $2\frac{1}{5}$)

	Input	Output
a	3	
b	5	
c	7	
d	9	

7 **Alaa saves $1\frac{3}{4}$ pounds from her pocket money every day for 4 days. What is the total amount that Alaa saves? Use the strategies shown.**

a Use Repeated Addition: ....

....

b Draw a Number Line:

c Convert pounds into piasters to solve, then write the answer in pounds:

$1\frac{3}{4}$ LE = ... PT.

.... X .... = ... PT = ... LE.

Assessment on Lesson 1

Unit 9

1 Choose the correct answer:

a) $\frac{3}{4} \times 6 =$ .... $\times 3$ $\left(\frac{3}{4} \text{ or } \frac{2}{3} \text{ or } \frac{3}{2} \text{ or } \frac{6}{9}\right)$

b) $\frac{5}{6} \times 9 =$ .... $\left(6\frac{5}{9} \text{ or } 9\frac{5}{6} \text{ or } 7\frac{5}{6} \text{ or } 7\frac{1}{2}\right)$

c) $2\frac{3}{4} +$ .... $= 5\frac{1}{3}$ $\left(2\frac{7}{12} \text{ or } 3\frac{7}{12} \text{ or } 2\frac{1}{2} \text{ or } 3\frac{2}{3}\right)$

d) $2\frac{7}{4} = 3\frac{\cdots}{\cdots}$ $\left(\frac{19}{4} \text{ or } \frac{15}{4} \text{ or } \frac{11}{4} \text{ or } \frac{3}{4}\right)$

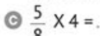
e) $\frac{48}{64} =$ .... (In the simplest form) $\left(\frac{3}{4} \text{ or } \frac{6}{8} \text{ or } \frac{12}{16} \text{ or } \frac{24}{32}\right)$

2 Complete the following:

a) $2\frac{1}{5} + 2\frac{1}{5} + 2\frac{1}{5} + 2\frac{1}{5} + 2\frac{1}{5} =$ .... X .... = ...

b) The multiplication problem representing the opposite number line is: .... X .... = ...

0 1 2 3



c) $\frac{5}{8} \times 4 =$ ....

d) $2\frac{1}{4} \times 6 =$ ....

3 Answer the following :

Ahmed studies for $3\frac{1}{4}$ hours every day. How many hours does Ahmed study in 4 days?

Find the answer by converting the hours into minutes, and then convert the answer into hours again.

....

....

....

Lessons 2&3

1 Use an area model to multiply. Simplify your answers, if possible:

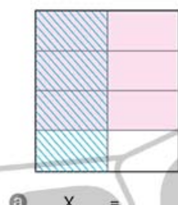
ⓐ $\frac{1}{2} \times \frac{1}{3} =$ ....

ⓑ $\frac{2}{3} \times \frac{3}{4} =$ ....

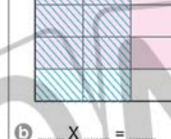
ⓒ $\frac{1}{2} \times \frac{3}{4} =$ ....

ⓓ $\frac{2}{3} \times \frac{2}{3} =$ ....

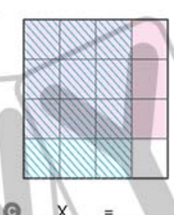
2 Write the multiplication problem represented by each of the following models, and find the result. Simplify your answers, if possible:



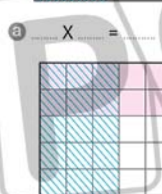
ⓐ .... X .... = ...



ⓑ .... X .... = ...

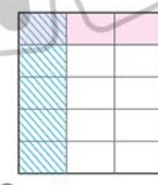


ⓒ .... X .... = ...



ⓓ .... X .... = ...

ⓔ .... X .... = ...

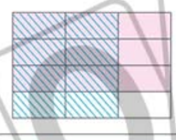


ⓕ .... X .... = ...

Theme 3

3 Write the product of each **multiplication problem** that represented by eacth of the following models:

ⓐ $\frac{\text{.......}}{\text{.......}}$



ⓑ $\frac{\text{.......}}{\text{.......}}$

ⓒ $\frac{\text{.......}}{\text{.......}}$

ⓓ $\frac{\text{.......}}{\text{.......}}$

4 Multiply, then simplify your answers, if possible:

ⓐ $\frac{3}{8} \times 4$ = ...

ⓑ $\frac{5}{9} \times 6$ = ...

ⓒ $\frac{12}{15} \times 5$ = ...

ⓓ $\frac{3}{16} \times 8$ = ...

ⓔ $\frac{7}{8} \times \frac{6}{7}$ = ...

ⓕ $\frac{5}{9} \times 3$ = ...

ⓖ $8 \times \frac{5}{6}$ = ...

ⓗ $\frac{3}{4} \times 6$ = ...

ⓘ $\frac{1}{3} \times 1\frac{1}{2}$ = ...

ⓙ $\frac{4}{5} \times 4\frac{1}{6}$ = ...

ⓚ $\frac{1}{3} \times \frac{3}{5}$ = ...

ⓛ $\frac{3}{4} \times \frac{8}{9}$ = ...

ⓜ $\frac{1}{2} \times \frac{2}{5}$ = ...

ⓝ $\frac{3}{4} \times \frac{2}{3}$ = ...

ⓞ $\frac{1}{4} \times \frac{2}{5}$ = ...

ⓟ $\frac{1}{3} \times \frac{1}{6}$ = ...

Unit 9

5 Complete:

a) $\frac{3}{8} \times \frac{4}{9} = \frac{1}{\dots} \times \frac{1}{\dots}$

b) $\frac{2}{\dots} \times \frac{3}{5} = \frac{2}{3} \times \frac{1}{5}$

c) $\frac{3}{4} \times \dots = \frac{3}{12} = \dots$

d) $3\frac{2}{3} \times \frac{\dots}{\dots} = \frac{\dots}{3} \times \frac{5}{2}$

6 Choose the correct answer:

a) $\frac{5}{8} \times \frac{4}{15} = \frac{1}{2} \times \dots$ ($\frac{2}{3}$ or $\frac{1}{15}$ or $\frac{3}{4}$ or $\frac{1}{3}$)

b) $\dots \times \frac{5}{9} = \frac{1}{3} \times \frac{1}{3}$ ($\frac{3}{5}$ or $\frac{3}{15}$ or $\frac{2}{10}$ or $\frac{1}{15}$)

c) $\frac{3}{5} \times \frac{2}{3} = \frac{\dots}{5}$ (3 or 2 or 6 or 15)

d) $\frac{8}{9} \times \frac{\dots}{6} = \frac{4}{9}$ (8 or 1 or 3 or 4)

e) $\frac{15}{20} \times \frac{4}{5} = \dots$ ($\frac{4}{25}$ or $\frac{1}{2}$ or $\frac{5}{4}$ or $\frac{3}{5}$)

Assessment on Lessons 2&3

Unit 9

1 Complete the following:

a) $\frac{2}{3} \times \frac{3}{2} = \dots\dots\dots$

b) $\frac{5}{6} \times \dots\dots\dots = \frac{45}{54}$

c) $\frac{4}{5} \times \dots\dots\dots = \frac{2}{5}$

d) $\frac{3}{4} \times \dots\dots\dots = \frac{3}{8}$

e) $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \dots\dots\dots \times \dots\dots\dots = \dots\dots\dots$

2 Choose the correct answer:

a) $\frac{5}{8} \times \frac{4}{5} = \dots\dots\dots$. (2 or $\frac{1}{2}$ or $\frac{5}{40}$ or $\frac{20}{8}$)

b) $\frac{45}{60} = \dots\dots\dots$ ($\frac{3}{4}$ or $\frac{9}{12}$ or $\frac{15}{20}$ or $\frac{6}{8}$)

c) $\frac{3}{4} \times \dots\dots\dots = \frac{3}{8}$ ($\frac{1}{4}$ or $\frac{2}{2}$ or $1\frac{1}{2}$ or $\frac{1}{2}$)

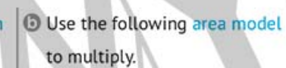
d) $5 \times \frac{3}{5} = \dots\dots\dots$ ($\frac{5}{3}$ or 6 or 3 or $\frac{3}{25}$)

e) $\frac{15}{25} = \dots\dots\dots$ ($\frac{2}{3}$ or $\frac{2}{5}$ or $\frac{6}{10}$ or $\frac{1}{2}$)

3 Answer the following :

a) Write the multiplication problem represented by the following models, and find the result. Simplify your answer, if possible:

$\dots\dots\dots \times \dots\dots\dots = \dots\dots\dots$



b) Use the following area model to multiply.

$\frac{4}{5} \times \frac{1}{4} = \dots\dots\dots$

Lessons 4&5

1 Multiply, then simplify your answers, if possible:

a) $\frac{3}{8} \times \frac{4}{9} =$ ....

b) $\frac{5}{9} \times \frac{6}{7} =$ ....

c) $\frac{12}{15} \times \frac{5}{8} =$ ....

d) $\frac{3}{16} \times \frac{8}{9} =$ ....

e) $\frac{7}{8} \times \frac{6}{7} =$ ....

f) $\frac{5}{9} \times \frac{3}{10} =$ ....

g) $8 \times \frac{5}{6} =$ ....

h) $\frac{3}{4} \times 6 =$ ....

i) $\frac{1}{3} \times 1\frac{1}{2} =$ ....

j) $\frac{4}{5} \times 4\frac{1}{6} =$ ....

k) $3\frac{1}{3} \times \frac{3}{5} =$ ....

l) $3\frac{3}{4} \times 8 =$ ....

m) $2\frac{1}{2} \times 1\frac{1}{5} =$ ....

n) $3\frac{3}{4} \times 1\frac{3}{5} =$ ....

o) $2\frac{1}{4} \times 5\frac{1}{3} =$ ....

p) $1\frac{1}{3} \times 1\frac{1}{6} =$ ....

q) $2\frac{5}{7} \times 3\frac{1}{2} =$ ....

Theme 3

2 Complete:

(a) $\frac{3}{8} \times \frac{2}{9} = \frac{\dots}{4} \times \frac{\dots}{3}$

(b) $\frac{4}{\dots} \times \frac{5}{12} = \frac{1}{7} \times \frac{5}{\dots}$

(c) $\frac{3}{4} \times \dots \frac{\dots}{\dots} = \frac{3}{4} \times \frac{15}{7}$

(d) $3\frac{2}{3} \times \dots \frac{\dots}{\dots} = \frac{\dots}{3} \times \frac{5}{2}$

(e) $\frac{2}{5} \times 1\frac{1}{2} = \frac{\dots}{5} \times \frac{\dots}{2}$

(f) $\dots \frac{\dots}{\dots} \times \dots \frac{\dots}{\dots} = \frac{15}{9} \times \frac{12}{5}$

3 Choose the correct answer:

(a) $\frac{5}{8} \times \frac{4}{15} = \frac{1}{2} \times$ .... $(\frac{2}{3}$ or $\frac{1}{15}$ or $\frac{3}{4}$ or $\frac{1}{3})$

(b) .... $\times \frac{5}{9} = \frac{1}{3} \times \frac{1}{3}$ $(\frac{3}{5}$ or $\frac{3}{15}$ or $\frac{2}{10}$ or $\frac{1}{15})$

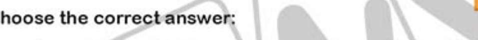
(c) $2\frac{2}{5} \times 4\frac{1}{6} =$ .... $(\frac{2}{5}$ or 10 or $\frac{5}{2}$ or $2)$

(d) $3\frac{4}{7} \times$ .... $= \frac{25}{7} \times \frac{12}{5}$ $(1\frac{2}{5}$ or $2\frac{1}{5}$ or $2\frac{2}{5}$ or $5\frac{1}{2})$

(e) $\frac{15}{20} \times \frac{4}{5} =$ .... $(\frac{4}{25}$ or $\frac{1}{2}$ or $\frac{5}{4}$ or $\frac{3}{5})$

Assessment on Lessons 4&5

Unit 9



1 Choose the correct answer:

ⓐ $3 \times \frac{4}{5} = 2 \times$ .... $(\frac{2}{5}$ or $2\frac{2}{5}$ or $\frac{5}{5}$ or $\frac{6}{5})$

ⓑ $\frac{4}{15} \times \frac{5}{8} =$ .... $\times \frac{1}{2}$ $(\frac{1}{3}$ or $\frac{4}{3}$ or $\frac{1}{15}$ or $\frac{1}{6})$

ⓒ $7 \times \frac{15}{4} =$ .... $(7 \times \frac{6}{4}$ or $7 \times 3\frac{3}{4}$ or $3 \times 7\frac{3}{4}$ or $14 \times 3\frac{3}{4})$

ⓓ $\frac{12}{15} = \frac{4}{\dots}$ (3 or 12 or 15 or 5)

2 Complete the following:

ⓐ $\frac{5}{8} \times \frac{2}{5} =$ ....

ⓑ $1\frac{3}{5} \times \frac{3}{4} =$ ....

ⓒ $\frac{5}{8} \times \frac{3}{4} =$ ....

ⓓ $\frac{2}{3} \times$ .... $= \frac{10}{9}$

ⓔ $3\frac{5}{7} = \frac{\dots}{7}$

3 Use the following area models to multiply. Simplify your answers, if possible:

ⓐ $\frac{2}{3} \times \frac{1}{2} =$ ....

ⓑ $4 \times \frac{3}{5} =$ ....

Theme 3

Lesson

6

1 Hazem purchased $5\frac{1}{2}$ kilograms of oranges. One kilogram costs $3\frac{1}{4}$ pounds. How much money did Hazem pay?

2 The price of one pen is $4\frac{3}{4}$ pounds. How much are 8 pens?

3 The school building consists of 5 floors, the height of each floor is $3\frac{3}{4}$ meters. How high is the school?

4 Hana had $10\frac{3}{4}$ pounds. She bought $3\frac{1}{2}$ kg of tomatoes. A kilogram costs $2\frac{1}{2}$ pounds. How much money is left with her?

5 Saleh trains to run for 4 hours and 15 minutes every day. How much time does he train in 5 days? Answer using fractions.

6 Hana bought three types of fabric. She has $2\frac{1}{2}$ meters of each type to make a quilt. If she used $5\frac{1}{4}$ meters to make a quilt, how long is the remaining fabric?

7 Salah bought $3\frac{1}{2}$ kg of oranges, the price of a kilogram is $4\frac{1}{4}$ pounds, and $2\frac{3}{4}$ kg of apples, the price of a kilogram is $8\frac{1}{2}$.

How much money did Salah pay for the fruits?

8 Write a story multiplication problem using $\frac{2}{3}$ and $1\frac{4}{5}$.

Put the result in the simplest form.

9 Write a story multiplication problem using $1\frac{1}{5}$ and $5\frac{3}{4}$.

Put the result in the simplest form.

Assessment on Lesson 6

Unit 9

1 Choose the correct answer:

(a) $\frac{3}{8} \times \frac{4}{9} =$ .... ($\frac{1}{3}$ or $\frac{2}{6}$ or $\frac{1}{6}$ or $\frac{2}{5}$)

(b) $8 \times \frac{3}{5} =$ .... ($2 \times \frac{6}{5}$ or $4 \times \frac{6}{5}$ or $6 \times \frac{5}{4}$ or $3 \times \frac{5}{8}$)

(c) $1\frac{3}{4} +$ .... $= 2\frac{1}{2}$ ($3\frac{1}{4}$ or $4\frac{1}{4}$ or $1\frac{3}{4}$ or $\frac{3}{4}$)

(d) 2 hours and 15 minutes = ... hours ($2\frac{1}{4}$ or $2\frac{1}{3}$ or $2\frac{1}{2}$ or $2\frac{3}{4}$)

(e) $\frac{3}{5} \times \frac{15}{18} =$ .... (2 or $\frac{1}{2}$ or 18 or $\frac{3}{5}$)

2 Complete the following:

(a) $\frac{15}{35} = \frac{3}{\dots}$

(b) $4\frac{3}{5} = 2\frac{\dots}{5}$

(c) $\frac{2}{3} \times \frac{3}{2} =$ ....

(d) $3\frac{3}{4} \times 2\frac{4}{5} =$ ....

(e) $4\frac{3}{8} - 2\frac{1}{2} =$ ....

3 Answer the following:

Saif trains at the club three days a week. He spends 2 hours and 30 minutes playing tennis and an hour and a quarter swimming. How much time does Saif spend at the club per week?

Answer using fractions.

....

....

....

Assessment on Concept 1

Unit 9

First: **Choose the correct answer:**

1. $5 \times \frac{4}{7} =$ .... $(2 \times \frac{10}{7}$ or $3 \times \frac{3}{7}$ or $6 \times \frac{3}{7}$ or $20 \times 7)$
2. $\frac{3}{7} \times \frac{7}{3} =$ .... (1 or 21 or 9 or 49)
3. $\frac{3}{8} \times \frac{4}{9} =$ .... $(\frac{1}{2} \times \frac{2}{3}$ or $\frac{3}{2} \times \frac{2}{3}$ or $\frac{1}{2} \times \frac{1}{3}$ or $\frac{3}{2} \times \frac{1}{3})$
4. $\frac{2}{3} \times \frac{18}{6} =$ .... $(\frac{1}{3}$ or $\frac{3}{6}$ or $\frac{1}{2}$ or $2)$

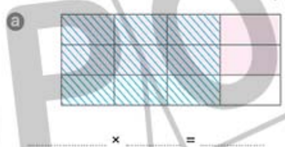
Second: **Complete the following. Simplify your answers, if possible:**

1. $3\frac{1}{2} \times \frac{6}{7} =$ ....
2. $4\frac{4}{5} \times 1\frac{1}{9} =$ ....
3. $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} =$ .... X .... = ...

Third: **Answer the following:**

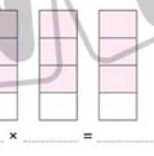
1. Write the multiplication problem represented by each of the following models, and find the result. Simplify your answers, if possible:

a



.... × .... = ...

b



.... × .... = ...

2. Sameh needs $2\frac{1}{2}$ hours to make a pie.
How long does he need to make 3 pies?

....

Concept 9.2 Dividing Whole Numbers and Unit Fractions

Lesson 7

1 **Match each situation with the division expression that represents it:**

(a) $3 \div 2$	2 bales of cotton shared by 3 manufacturers.	1
(b) $2 \div 3$	3 bales of cotton shared by 2 manufacturers.	2
(c) $2 \div 5$	5 bales of cotton shared by 2 manufacturers.	3
(d) $5 \div 2$	3 bales of cotton shared by 5 manufacturers.	4
(e) $3 \div 5$	2 bales of cotton shared by 5 manufacturers.	5

2 **Using the models shown, find the quotient as a fraction or mixed number. Simplify your answers, if possible:**

(a) $6 \div 4 =$ ....

(b) $5 \div 3 =$ ....

(c) $4 \div 5 =$ ....

(d) $3 \div 2 =$ ....

(e) $3 \div 4 =$ ....

(f) $6 \div 3 =$ ....

(g) $3 \div 3 =$ ....

3 **Write the division problem represented by each model of the following, then find the quotient:**

ⓐ .... ÷ .... = ...

ⓑ .... ÷ .... = ...

ⓒ .... ÷ .... = ...

ⓓ .... ÷ .... = ...

ⓔ .... ÷ .... = ...

ⓕ .... ÷ .... = ...

4 **Complete the following table:**

	Expression	Quotient	Standard Division Algorithm
ⓐ	$8 \div 3$	$\frac{8}{3}$ = ...	$3 \overline{)\ 8}$ ....
ⓑ	$9 \div 4$		
ⓒ	$4 \div 3$		

	Expression	Quotient	Standard Division Algorithm
ⓓ	$8 \div 5$		
ⓔ	$9 \div 3$		
ⓕ	$5 \div 4$		

Assessment on Lesson 7

Unit 9

1 Choose the correct answer:

a) $\frac{24}{48}$ = ... ($\frac{4}{8}$ or $\frac{8}{16}$ or $\frac{2}{4}$ or $\frac{1}{2}$)

b) $\frac{3}{8} \times \frac{2}{3}$ = ... ($\frac{1}{2} \times \frac{1}{2}$ or $\frac{1}{2} \times \frac{1}{3}$ or $\frac{1}{4} \times \frac{1}{2}$ or $\frac{3}{4} \times \frac{2}{3}$)

c) $8 \div 5$ = ... ($8\frac{3}{5}$ or $5\frac{3}{8}$ or $1\frac{3}{5}$ or $\frac{5}{8}$)

d) $45 \div 60$ = ... ($1\frac{15}{60}$ or $\frac{3}{4}$ or $4\frac{5}{6}$ or $1\frac{1}{3}$)

e) $2\frac{1}{3}$ is a/an ....

(proper fraction or improper fraction or mixed number or whole number)

2 Find the result:

a) $3\frac{3}{5} + 1\frac{1}{2}$ = ...

b) $4\frac{1}{3} - 2\frac{3}{4}$ = ...

c) $3\frac{1}{5} \times 1\frac{7}{8}$ = ...

d) $5 \div 15$ = ...

3 Answer the following :

Hussam has 2 liters of juice concentrate and 3 liters of water; he wants to mix them and put the mixture in 10 cups evenly.

How much juice does he put in each cup?

....

....

....

Lessons 8&9

1 Complete the following:

ⓐ $\frac{1}{2}$ X 2 = ...

ⓑ $\frac{1}{2}$ X .... = 2

ⓒ .... X 6 = 3

ⓓ $\frac{1}{3}$ X .... = 1

ⓔ .... X 6 = 2

ⓕ $\frac{1}{3}$ X 9 = ...

ⓖ $\frac{1}{4}$ X .... = 1

ⓗ $\frac{1}{4}$ X .... = 2

ⓘ $\frac{1}{4}$ X .... = 3

ⓙ $\frac{1}{5}$ X .... = 2

ⓚ $\frac{1}{6}$ X .... = 3

ⓛ .... X 8 = 1

2 Using the models shown, find the quotient:

ⓐ $\frac{1}{2}$ ÷ 3 = ...

ⓑ $\frac{1}{5}$ ÷ 2 = ...

ⓒ $\frac{1}{3}$ ÷ 4 = ...

ⓓ 3 ÷ $\frac{1}{5}$ = ...

ⓔ 2 ÷ $\frac{1}{4}$ = ...

ⓕ 5 ÷ $\frac{1}{3}$ = ...

Theme 3

3 Find the result. Simplify your answers, if possible:

a
1. $\frac{1}{4} \div 2 =$ .... X .... = ...
2. $\frac{1}{2} \div 4 =$ .... X .... = ...
3. $4 \div \frac{1}{2} =$ .... X .... = ...
4. $2 \div \frac{1}{4} =$ .... X .... = ...
5. $4 \div 2 =$ ....
6. $2 \div 4 =$ ....

b
1. $\frac{1}{5} \div 3 =$ .... X .... = ...
2. $\frac{1}{3} \div 5 =$ .... X .... = ...
3. $5 \div \frac{1}{3} =$ .... X .... = ...
4. $3 \div \frac{1}{5} =$ .... X .... = ...
5. $5 \div 3 =$ ....
6. $3 \div 5 =$ ....

c
1. $\frac{1}{9} \div 3 =$ ....
2. $\frac{1}{3} \div 9 =$ ....
3. $9 \div \frac{1}{3} =$ ....
4. $3 \div \frac{1}{9} =$ ....
5. $9 \div 3 =$ ....
6. $3 \div 9 =$ ....

d
1. $\frac{1}{6} \div 4 =$ ....
2. $\frac{1}{4} \div 6 =$ ....
3. $6 \div \frac{1}{4} =$ ....
4. $4 \div \frac{1}{6} =$ ....
5. $6 \div 4 =$ ....
6. $4 \div 6 =$ ....

4 Complete:

a. $\frac{1}{5} \div$ .... $= \frac{1}{30}$
b. $\frac{1}{5}$ X .... $= \frac{1}{30}$
c. $5 \div$ .... $= 30$
d. 5 X .... = 30
e. $\frac{1}{8} \div$ .... $= \frac{1}{24}$
f. $\frac{1}{8}$ X .... $= \frac{1}{24}$
g. $8 \div$ .... $= 24$
h. 8 X .... = 24
i. .... $\div 7 = \frac{1}{14}$
j. .... X $\frac{1}{7} = \frac{1}{14}$
k. .... $\div \frac{1}{7} = 14$
l. .... X 7 = 14

Assessment on Lessons 8&9

Unit 9

1 Choose the correct answer:

ⓐ $3 \div 18 =$ .... ($\frac{1}{3} \div \frac{1}{2}$ or $\frac{1}{2} \div \frac{1}{3}$ or $\frac{1}{2} \div 3$ or $3 \div \frac{1}{2}$)

ⓑ $\frac{5}{8} \times \frac{8}{5} =$ .... ($\frac{1}{4} \times 2$ or $\frac{1}{2} \times 4$ or $\frac{1}{2} \times 2$ or $\frac{1}{2} \times \frac{1}{2}$)

ⓒ $5\frac{1}{2} -$ .... $= 2\frac{1}{4}$ ($3\frac{1}{2}$ or $3\frac{1}{4}$ or $2\frac{1}{2}$ or $2\frac{1}{4}$)

ⓓ $5 \times \frac{4}{7} = 10 \times$ .... ($\frac{39}{7}$ or $\frac{5}{7}$ or $\frac{4}{7}$ or $\frac{2}{7}$)

ⓔ .... $\div \frac{1}{5} = 15$ ($\frac{1}{10}$ or 10 or 3 or $\frac{1}{3}$)

2 Find the result:

ⓐ $2\frac{3}{6} + \frac{3}{4} =$ ....

ⓑ $4\frac{1}{3} - 2\frac{1}{2} =$ ....

ⓒ $5\frac{1}{4} \times 1\frac{1}{3} =$ ....

ⓓ $5 \div \frac{1}{2} =$ ....

ⓔ $\frac{1}{4} \div 3 =$ ....

3 Hazem wants to divide 3 pizzas among 4 of his friends.
Help Hazem and complete:

ⓐ Hazem divides each pizza into .... pieces.

ⓑ Each friend gets .... piece(s).

Theme 3

Lesson 10

1 For each problem, identify which operation (addition, subtraction, multiplication, or division) should be used to model the situation described:

ⓐ Gehad mixes $\frac{1}{2}$ liter of blue paint with $\frac{3}{8}$ liter of red paint to make a shade of purple paint. How many liters of purple paint does Gehad make?

....

ⓑ Manal has $2\frac{1}{2}$ hours to complete her schoolwork. She finishes her math homework in $\frac{3}{4}$ of an hour.
How much time remains for the rest of her schoolwork?

....

ⓒ Fatma feeds her cat $\frac{1}{8}$ of a kilogram of cat food each day.

1. How much cat food does she need to feed her cat for 6 days?

....

2. How many days will 4 kg of cat food last?

....

ⓓ After Hoda's birthday party, $\frac{1}{5}$ of the food that remained Hoda gave $\frac{1}{2}$ of the remaining food to her aunt.
What fraction of the total amount of food did her aunt receive?

....

ⓔ Nader has 8 liters of fruit juice. If he drinks $\frac{1}{4}$ liter of juice each day, how many days will it take him to finish all the juice?

....

ⓕ The factory's staff is $\frac{5}{8}$ female. How much of the staff is male?

....

2 Answer the following:

a) A teacher wants to give $\frac{1}{8}$ of a box of pencils to each student.

She has 5 boxes of pencils.

To how many students will she be able to give pencils?

b) Afaf and Adel pulled up weeds in $\frac{1}{6}$ of the garden's area.

If they divided the weeding equally, what total area of the garden did Afaf weed?

c) A toddler eats $\frac{1}{3}$ of a piece of bread each day for breakfast.

If the loaf of bread contains 12 pieces, how many days of breakfast will the loaf of bread provide?

d) A computer takes $\frac{1}{200}$ of a second to answer a math problem.

How many math problems can the computer answer in 120 seconds?

e) A box of dry milk powder contains 15 servings.

The box of milk powder weighs $\frac{1}{2}$ of a kilogram.

What is the weight of each serving of dry milk powder?

f) It takes Aya $\frac{1}{3}$ of an hour to model 4 identical clay figures.

How long does it take for Aya to model one clay figure?

Assessment on Lesson 10

Unit 9

1 **Find the result. Simplify your answers, if possible:**

ⓐ $3\frac{2}{3} + 2\frac{1}{2} =$ ....

ⓑ $7\frac{1}{4} - 2\frac{1}{3} =$ ....

ⓒ $3\frac{1}{8} \times 1\frac{1}{5} =$ ....

ⓓ $4 \div \frac{1}{3} =$ ....

ⓔ $\frac{1}{4} \div 3 =$ ....

2 **Complete the following:**

ⓐ $\frac{3}{5} \times$ ...... $= 3$

ⓑ $\frac{1}{3} \div$ ...... $= \frac{1}{15}$

ⓒ $5 \times$ ...... $= \frac{1}{2}$

ⓓ ...... $\div \frac{1}{2} = 14$

ⓔ $\frac{36}{48} = \frac{6}{\dots} = \frac{\dots}{4}$

3 **Answer the following:**

ⓐ Hana had $2\frac{1}{2}$ pounds, and her father gave her $3\frac{1}{2}$ pounds. She wants to buy pens that cost $\frac{1}{2}$ pounds each. How many pens can she buy?

....

....

ⓑ Salah wants to use 4 meters of fabric to make 6 dresses for his children. If he divides the fabric evenly, what is the length of fabric used in each dress?

....

....

Assessment on Concept 2

Unit 9

First: **Choose the correct answer:**

1. $12 \div 8 =$ .... $(\frac{2}{3}$ or $1\frac{1}{2}$ or $\frac{8}{12}$ or $1\frac{4}{12})$
2. $\frac{1}{2} \div 3 =$ .... $(\frac{3}{2}$ or $\frac{2}{3}$ or $\frac{1}{6}$ or $6)$
3. $5 \times \frac{1}{8} =$ .... $(5 \div \frac{1}{8}$ or $5 \div 8$ or 5×8 or $8 \div 5)$
4. $7 \div 3 =$ .... $(\frac{3}{7}$ or 21 or $2\frac{1}{3}$ or $3\frac{1}{2})$
5. $5 \div 15 =$ .... $(3$ or $\frac{1}{3}$ or 75 or $5\frac{1}{5})$

Second: **Complete the following:**

1. $\frac{1}{5} \div$ .... $= \frac{1}{10}$
2. $4 \div$ .... $= 16$
3. .... $\div \frac{1}{3} = 12$
4. .... $\div 8 = \frac{1}{2}$
5. .... $\div 9 = 1\frac{1}{3}$

Third: **Answer the following:**

- Find the quotient and represent it on the model:

1. $5 \div 3 =$ ....
2. $2 \div \frac{1}{4} =$ ....
3. $\frac{1}{2} \div 4 =$ ....

Fourth: **Answer the following:**

- Safa has $\frac{1}{2}$ liter of juice that she wants to divide **equally** among her **three** children. How much juice will each of them get?

....

Assessment 1 on

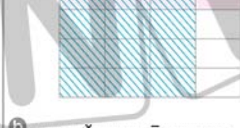
First: Choose the correct answer:

1. $\frac{3}{8} \times 12 = \frac{6}{8} \times$ .... $(6$ or 4 or 9 or $3)$
2. $\frac{3}{10} \times 15 =$ .... $(2\frac{1}{4}$ or $4\frac{1}{2}$ or $4\frac{3}{5}$ or $3\frac{4}{5})$
3. $\frac{4}{5} \times 1\frac{1}{2} =$ .... $(\frac{4}{5} + \frac{4}{5}$ or $\frac{2}{5} + \frac{2}{5}$ or $\frac{4}{5} + \frac{2}{5}$ or $\frac{5}{5} + \frac{2}{5})$
4. .... $\times$ .... $= \frac{19}{4} \times \frac{7}{2}$
   $(2\frac{3}{4} \times 4\frac{1}{3}$ or $4\frac{3}{4} \times 2\frac{1}{3}$ or $8 \times \frac{1}{4}$ or $6 \times \frac{13}{12})$

Second: Complete the following:

1. $6 \div 8 =$ ....
2. .... $\times 3 = \frac{3}{4}$
3. $5 \div$ .... $= 15$
4. .... $\times 8 = 2$
5. $14 \div$ .... $= 14 \times 3$

Third: Write the problem represented by each of the following models, and find the result. Simplify your answers, if possible:



a. .... $\div 4 =$ ....

b. .... × .... = ...

Fourth: Answer the following:

- Hossam saves $4\frac{1}{2}$ pounds per week. How much does he save in 6 weeks?

....

....

Assessment 2 on Unit 9

First: Complete the following:

1. $\frac{4}{5} \times 3 = \frac{2}{5} \times$ ....
2. $\frac{4}{9} \times 12 =$ ....
3. $\frac{6}{7} \times 1\frac{1}{6} =$ .... X .... = ...
4. $\frac{3}{5} \times \frac{7}{7} = \frac{\dots}{5}$
5. $1\frac{2}{3} \times 2\frac{1}{4} =$ .... X .... = ...

Second: Choose the correct answer:

1. $8 \div 12 =$ .... ($\frac{2}{3}$ or $1\frac{1}{2}$ or $\frac{3}{4}$ or $1\frac{1}{3}$)
2. .... $\div \frac{1}{4} = 16$ ($\frac{1}{4}$ or 4 or 2 or 8)
3. $\frac{1}{3} \times$ .... $= 3$ (3 or 6 or 9 or 12)
4. $18 \div 8 =$ .... ($\frac{4}{9}$ or $4\frac{1}{4}$ or $2\frac{1}{4}$ or 3)
5. $4 \times \frac{1}{3} =$ .... ($4 \div 3$ or $4 \div \frac{1}{4}$ or $\frac{1}{4} \div \frac{1}{3}$ or $\frac{1}{4} \div 3$)

Third: Using the models shown find the result:

a) $3 \div \frac{1}{4} =$ ....

b) $\frac{1}{3} \times \frac{2}{3} =$ ....

Fourth: Answer the following:

- The distance from Ahmed's house to his school is 5 km, Ahmed wants to divide that distance into 4 equal parts. How long is each part?

....

Theme 4

Applications of Geometry and Measurement

Unit 10 Two-Dimensional Figures and Coordinate Planes

Unit 11 Volume

Unit 12 Pie Charts and Applying Mathematical Learning

Unit 10 Two-Dimensional Figures and Coordinate Planes

Concept 10.1 Investigating Attributes of Shapes

Lesson 1

1 Complete the following sentences:

a) Quadrilaterals that contain two pairs of parallel sides are:

.... , ... , ... , ...

b) Quadrilaterals that have four sides of equal length are:

.... , ...

c) Quadrilaterals that have four right angles are:

.... , ...

d) A parallelogram contains .... of parallel sides, ... of acute angles, and .... of obtuse angles.

e) A rectangle contains .... of parallel sides, and .... right angles.

f) A rhombus contains .... of parallel sides, ... of acute angles, and .... of obtuse angles.

g) A square contains .... of parallel sides, and .... right angles.

h) A kite contains .... of congruent adjacent sides.

i) A quadrilateral that has only one pair of parallel sides is a ....

j) A quadrilateral with two pairs of congruent adjacent sides is a ....

k) A quadrilateral that has two pairs of parallel sides and all of its angles are right angles is a ....

l) The quadrilateral that has two pairs of parallel sides, all its sides are equal, and its angles are right is a ....

ⓜ The quadrilateral that has one pair of acute angles, one pair of obtuse angles, two pairs of parallel sides, and all its sides are equal is a ....

ⓝ The quadrilateral with two pairs of parallel sides is a ....

2 Choose the correct answer:

ⓐ A .... is a quadrilateral in which all of its sides are equal in length.

(parallelogram or rhombus or rectangle or trapezium)

ⓑ A .... is a quadrilateral in which all its angles are right angles.

(rectangle or rhombus or parallelogram or trapezium)

ⓒ A .... is a quadrilateral with one pair of acute angle and one pair of obtuse angles.

(square or rectangle or trapezium or parallelogram)

ⓓ A .... is a quadrilateral with two pairs of parallel sides, and all of its sides are equal.

(rectangle or rhombus or trapezium or parallelogram)

ⓔ A .... is a quadrilateral with two pairs of congruent adjacent sides, two acute angles and two obtuse angles.

(rectangle or rhombus or trapezium or kite)

ⓕ A .... is a quadrilateral with two pairs of parallel sides, and all of its angles are right angles.

(rectangle or rhombus or trapezium or parallelogram)

ⓖ A .... is a quadrilateral with two pairs of parallel sides, all its angles are right and all its sides are equal in length.

(rhombus or trapezium or parallelogram or square)

ⓗ A parallelogram with four right angles is a ....

(rectangle or rhombus or trapezium or parallelogram)

i A parallelogram with four equal sides is a ....

(rectangle or rhombus or trapezium or parallelogram)

j A rectangle with four equal sides is a ....

(square or rhombus or trapezium or parallelogram)

k A rhombus with four right angles is a ....

(square or rectangle or trapezium or parallelogram)

3 Put a tick (✓) in front of the appropriate properties for each quadrilateral:

Properties	Parallelogram	Rectangle	Square	Rhombus	Trapezium	Kite
Only one pair of parallel sides						
Two pairs of opposite parallel sides						
Two pairs of congruent adjacent sides						
4 congruent sides						
4 right angles						
Two acute angles and two obtuse angles						

4 Study the following figures, then complete:

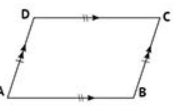
a 1 The corresponding figure is called a ....

2 $\overline{AB}$ and .... are parallel and congruent.

3 $\overline{AD}$ and .... are parallel and congruent.

4 ∠ A and ∠ C are .... angles.

5 ∠ B and ∠ D are .... angles.



(b) 1 The corresponding figure is called a ....

2 $\overline{AB}$ and .... are parallel and congruent.

3 $\overline{AD}$ and .... are parallel and congruent.

4 All angles are .... angles.

D C A B

(c) 1 The corresponding figure is called a ....

2 $\overline{KN}$ and .... are parallel.

3 $\overline{KL}$ and .... are parallel.

4 $\overline{KN}$ ...., ... and .... are congruent.

5 ∠ N and ∠ L are .... angles.

6 ∠ K and ∠ M are .... angles.

N M K L

(d) 1 The corresponding figure is called a ....

2 $\overline{XL}$ and .... are parallel.

3 $\overline{XY}$ and .... are parallel.

4 $\overline{XY}$ ...., ... and .... are congruent.

5 All angles are .... angles.

X Y L Z

(e) 1 The corresponding figure is called a ....

2 $\overline{AB}$ and .... are parallel.

D C A B

(f) 1 The corresponding figure is called a ....

2 $\overline{XL}$ and .... are congruent.

3 $\overline{ZL}$ and .... are congruent.

L X Z Y

Assessment on Lesson 1

Unit 10

1 Choose the correct answer:

ⓐ A .... is a quadrilateral with two pairs of congruent adjacent sides.

(kite or trapezium or parallelogram or rectangle)

ⓑ A .... is a quadrilateral in which all angles are right.

(rectangle or rhombus or parallelogram or trapezium)

ⓒ $2\frac{1}{2} \times 3\frac{1}{3} =$ .... ($8\frac{1}{3}$ or $5\frac{2}{3}$ or $2\frac{5}{3}$ or $6\frac{1}{6}$)

ⓓ $\frac{25}{50} =$ .... (In the simplest form) ($\frac{2}{5}$ or $\frac{50}{100}$ or $\frac{5}{10}$ or $\frac{1}{2}$)

ⓔ $3 \times \frac{4}{5} = 2 \times$ .... ($\frac{14}{5}$ or $\frac{12}{5}$ or $\frac{6}{5}$ or 6)

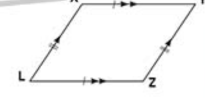
2 Complete the following:

ⓐ A quadrilateral that has only one pair of parallel sides is a ....

ⓑ A quadrilateral that has one pair of acute angles, one pair of obtuse angles, and two pairs of parallel sides and all its sides are equal is a ....

ⓒ $\frac{12}{\ldots} = \frac{3}{4}$ ⓓ $3\frac{4}{5} +$ .... $= 5\frac{1}{2}$ ⓔ $5 \div \frac{1}{3} =$ ....

3 Study the corresponding figure, then complete:



ⓐ The corresponding figure is called a ....

ⓑ $\overline{YZ}$ and .... are parallel and congruent.

ⓒ $\overline{XY}$ and .... are parallel and congruent.

ⓓ ∠ X and ∠ Z are .... angles.

ⓔ ∠ Y and ∠ L are .... angles.

Theme 4

Lesson 2

1 Measure the sides of the following triangles and determine the types of their angles, then classify them according to the lengths of their sides and the types of their angles. Use a ruler to measure the lengths to the nearest $\frac{1}{2}$ cm or the nearest whole number:

a Triangle		1	2	3
		C, A, B	C, A, B	C, A, B
Sides Lengths	AB	.... cm	.... cm	.... cm
	BC	.... cm	.... cm	.... cm
	AC	.... cm	.... cm	.... cm
Type of the Triangle According to the Lengths of Its Sides		....	....	....
Angles Measures	A	....	....	....
	B	....	....	....
	C	....	....	....
Type of the Triangle According to the Types of Its Angles		....	....	....

ⓑ Triangle		1	2	3
Sides Lengths	AB	.... cm	.... cm	.... cm
	BC	.... cm	.... cm	.... cm
	AC	.... cm	.... cm	.... cm
Type of the Triangle According to the Lengths of Its Sides		....	....	....
Angles Measures	A	....	....	....
	B	....	....	....
	C	....	....	....
Type of the Triangle According to the Types of Its Angles		....	....	....

2 Complete the following:

ⓐ The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.

ⓑ The type of triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.

ⓒ The type of triangle whose side lengths are equal according to the lengths of its sides is a/an .... triangle.

d The type of triangle whose angles are all acute according to the types of angles is a/an .... triangle.

e The type of triangle that contains one right angle and two acute angles according to the types of its angles is a/an .... triangle.

f The type of triangle that contains one obtuse angle and two acute angles according to the types of its angles is a/an .... triangle.

g Any triangle has at least .... acute angle(s).

h The type of an equilateral triangle according to the types of its angles, is a/an .... triangle.

3 Choose the correct answer:

a A triangle whose sides are .... cm, 4 cm, and 7 cm is a scalene triangle. (4 or 7 or 8)

b A triangle whose side lengths are 8 cm, 5 cm, and .... cm is an isosceles triangle. (6 or 5 or 3 or 4)

c A triangle whose side lengths are 4 cm, 4 cm, and .... cm is an equilateral triangle. (3 or 5 or 7 or 4)

d Any triangle contains at least .... acute angle(s). (0 or 1 or 2 or 3)

e All angles of an acute triangle are .... angles. (acute or obtuse or right or straight)

f The triangle that has a right angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)

g A triangle that contains one obtuse angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)

Assessment on Lesson 2

Unit 10

1 Choose the correct answer:

a) A triangle whose side lengths are 5 cm, 7 cm, and 5 cm is called a/an .... triangle. (equilateral or scalene or isosceles or scalene)

b) A triangle that contains one right angle and two acute angles is called a/an .... triangle. (acute or obtuse or right or equilateral)

c) $3 \div 6 =$ .... ($\frac{3}{2}$ or $\frac{3}{4}$ or $\frac{1}{2}$ or 2)

d) $\frac{3}{5} \times$ .... $= 6$ (15 or 10 or 2 or 5)

e) A .... is a quadrilateral in which there are two pairs of parallel sides, two acute angles and two obtuse angles.

(square or rectangle or trapezium or parallelogram)

2 Complete the following:

a) The type of triangle whose side lengths are 4 cm, 3 cm, and 6 cm according to the lengths of its sides is a/an .... triangle.

b) The trapezium is a quadrilateral with .... of parallel sides.

c) $3\frac{4}{5} + 2\frac{3}{4} =$ ....

d) $\frac{5}{6} = \frac{\ldots}{24}$

e) $3 \times \frac{6}{7} = 2 \times$ ....

3 Answer the following:

a) Study the following figure, then complete:

1. The lengths of the sides: AB = ... cm, BC = ... cm, AC = ... cm.
2. The type of triangle according to the lengths of its sides is ....
3. The lengths of the angles:
   - ∠ A is a/an .... angle.
   - ∠ B is a/an .... angle.
   - ∠ C is a/an .... angle.
4. The type of triangle according to the types of its angles is ....

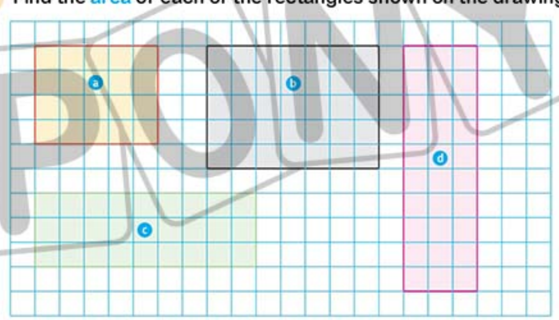
C

A B

b) Nihal had $10\frac{1}{2}$ pounds. She bought candy for $6\frac{1}{4}$ pounds. How much money is left with her? ....

Lessons 3&4

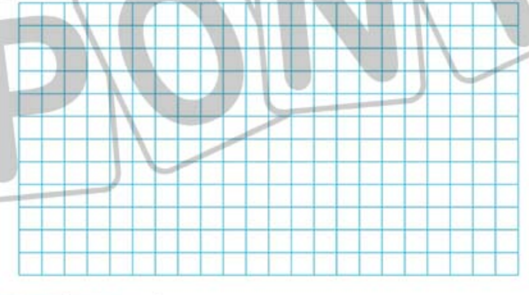
1 Find the **area** of each of the rectangles shown on the drawing:



Rectangle	a	b	c	d
Area (square units)	....	....	....	....

2 Draw rectangles whose **areas** are:

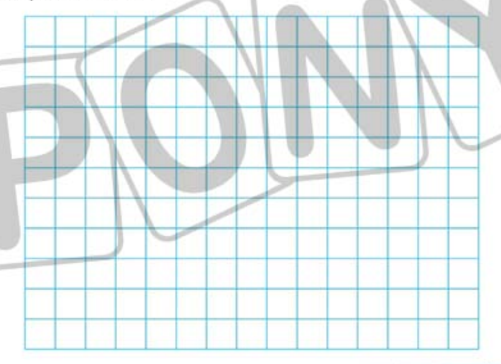
(12 square units – 10 square units – 8 square units):



3 Nehal is tiling her 4 X 5 $\frac{1}{2}$ unit bathroom. The tiles come in 1-unit squares. How many tiles will she need to cover the floor? Model your thinking.

4 Amir is measuring a painting. It is 5 units long by 3 $\frac{1}{2}$ units wide. What is the area of this painting?

5 Draw a model for a rectangle measuring 8 $\frac{1}{4}$ units by 12 m. Then, find its area:



Theme 4

6 Answer the following:

ⓐ Akram's herb garden is 10 units long and $\frac{1}{3}$ units wide.
What is the area of Akram's herb garden?

....

ⓑ A trench was dug in Doaa's backyard to fix her plumbing.
The trench is 8 meters long and $\frac{1}{10}$ m wide.
What is the area of the trench?

....

ⓒ A mosque has a window that is $\frac{3}{10}$ meter wide and 2 meters long.
What is the area of the window in square meters?

....

ⓓ Find the area of the following rectangles:

1. Rectangle: $\frac{3}{4}$ km by $\frac{2}{9}$ km

Area = ...

2. Rectangle: $5\frac{1}{3}$ m by $2\frac{1}{2}$ m

Area = ...

7 Complete the following table:

	Length	Width	Area
ⓐ	$4\frac{1}{2}$ cm	$3\frac{2}{3}$ cm	.... cm^2
ⓑ	$3\frac{1}{4}$ cm	2 cm	.... cm^2
ⓒ	.... cm	$\frac{1}{5}$ cm	3 cm^2
ⓓ	8 cm	$\frac{3}{4}$ cm	.... cm^2
ⓔ	$7\frac{1}{2}$ cm	$\frac{4}{5}$ cm	.... cm^2
ⓕ	9 cm	$3\frac{1}{3}$ cm	.... cm^2

Assessment on Lessons 3&4

Unit 10

1 Choose the correct answer:

a) $\frac{1}{2} \div 3 =$ .... ($\frac{3}{2}$ or $\frac{2}{3}$ or $\frac{1}{6}$ or 6)

b) $2\frac{1}{2} +$ .... $= 7$ ($6\frac{1}{2}$ or $4\frac{1}{2}$ or $9\frac{1}{2}$ or $5\frac{1}{2}$)

c) The rectangle has .... of parallel sides.
(1 pair or 2 pairs or 3 pairs or 4 pairs)

d) A .... is a quadrilateral with four sides of equal length.
(rectangle or trapezium or rhombus or parallelogram)

e) A right triangle contains a right angle and two .... angles.
(acute or right or obtuse or straight)

2 Complete the following:

a) The type of triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is ....

b) The area of a rectangle whose dimensions are $1\frac{3}{4}$ cm and $\frac{4}{5}$ cm is .... cm^2.

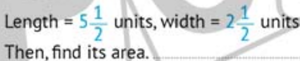
c) $3\frac{1}{3}$ hours = ... hours, ... minutes.

d) $\frac{15}{25} = \frac{3}{....}$

e) $4\frac{3}{8} \times 1\frac{1}{7} =$ ....

3 Answer the following:

a) Draw a rectangle with the following dimensions:



Length = $5\frac{1}{2}$ units, width = $2\frac{1}{2}$ units

Then, find its area. ....

b) Mona bought $6\frac{1}{4}$ meters of fabric; the price of one meter is $3\frac{1}{5}$ pounds. What is the price of the whole fabric she bought?

....

Assessment on Concept 1

Unit 10

First: **Choose the correct answer:**

1. Any triangle has at least .... acute angle(s). (0 or 1 or 2 or 3)
2. A triangle that contains one obtuse angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)
3. A .... is a quadrilateral with one pair of acute angles and one pair of obtuse angles. (square or rectangle or trapezium or parallelogram)
4. A .... is a quadrilateral in which all its sides are of equal length. (parallelogram or rhombus or rectangle or trapezium)
5. The rectangle whose width is $\frac{3}{4}$ cm and its area is 3 cm^2, its lengths is .... cm. ($\frac{9}{4}$ or 4 or $\frac{4}{9}$ or $\frac{4}{3}$)

Second: **Complete the following:**

1. A rectangle whose dimensions are $9\frac{1}{3}$ m and $2\frac{1}{7}$ m, its area is .... m^2.
2. A kite contains .... of adjacent sides that are congruent.
3. A quadrilateral that has only one pair of parallel sides is a ....
4. The type of triangle whose side lengths are 8 cm, 8 cm, and 8 cm according to the lengths of its sides is ....
5. Area of the rectangle = ... X ....

Third: **Answer the following:**

a. Draw a rectangle with length $5\frac{1}{3}$ units and width 3 units, then find its area.

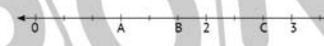
....

b. A parking lot is $2\frac{1}{4}$ km long and $1\frac{1}{5}$ km wide. What is the area of the parking lot? ....

Concept 10.2 Coordinate Planes

Lessons 5-7

1 **Use the following number line to complete:**



ⓐ The value of A is ....

ⓑ The value of B is ....

ⓒ The value of C is ....

ⓓ The distance between A and B is ....

ⓔ The distance between C and A is ....

2 **Use the following number line to complete:**

ⓐ The value of X is ....

ⓑ The value of Y is ....

ⓒ The value of Z is ....

ⓓ The distance between X and Y is ....

ⓔ The distance between Y and Z is ....

3 **Use the opposite number line to complete:**

4
D
C
B
1
A
0

ⓐ The value of A is ....

ⓑ The value of B is ....

ⓒ The value of C is ....

ⓓ The value of D is ....

ⓔ The distance between A and B is ....

ⓕ The distance between C and B is ....

ⓖ The distance between D and C is ....

ⓗ The distance between D and B is ....

(i) The distance between C and A is ....

(j) The distance between D and A is ....

4 **In the following coordinate plane, write the ordered pair representing each of the following points:**

(a) A (.................. , ...)

(b) B (.................. , ...)

(c) C (.................. , ...)

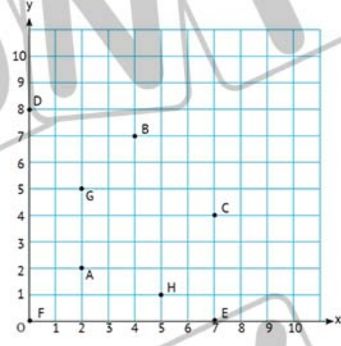
(d) D (.................. , ...)

(e) E (.................. , ...)

(f) F (.................. , ...)

(g) G (.................. , ...)

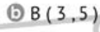
(h) H (.................. , ...)



5 **Plot the following points on the coordinate plane:**

(a) A (2 , 3)

(b) B (3 , 5)



(c) C (0 , 0)

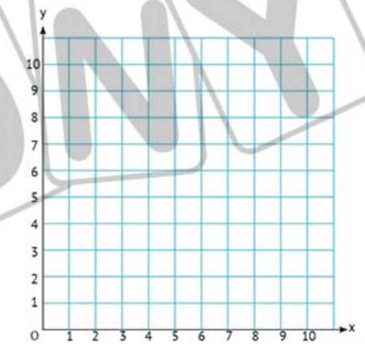
(d) D (7 , 0)

(e) E (0 , 7)

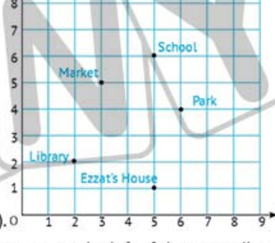
(f) F (8 , 8)

(g) G (4 , 6)

(h) H (6 , 1)



6 **Use the following coordinate grid to complete:**



ⓐ The ordered pair representing the library is (.......... , ...).

ⓑ The ordered pair representing the park is (.......... , ...).

ⓒ The ordered pair representing the school is (.......... , ...).

ⓓ The ordered pair representing the market is (.......... , ...).

ⓔ The ordered pair representing Ezzat's house is (.......... , ...).

ⓕ To move from the school to the library, move to the left of the x-coordinate .... unit(s), then move down to the y-coordinate .... unit(s).

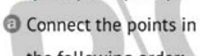
ⓖ To move from the library to the market, move to the ...... of the x-coordinate ...... unit(s), then move to the .... of the y-coordinate .... unit(s).

ⓗ To move from the park to Ezzat's house, move to the .... of the x-coordinate .... unit(s), then move to the .... of the y-coordinate .... units(s).

7 **Plot the following points on the coordinate plane, then answer:**

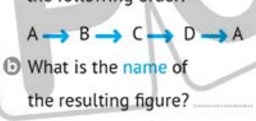
A (1 , 7) , B (1 , 4)

C (7 , 4) , D (7 , 7)



ⓐ Connect the points in the following order:

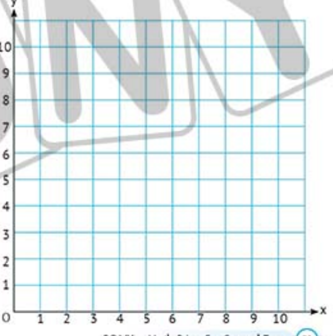
A ⟶ B ⟶ C ⟶ D ⟶ A



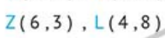
ⓑ What is the name of the resulting figure? ....

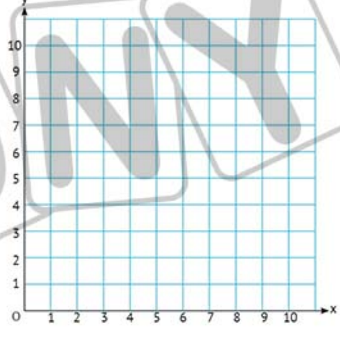
ⓒ AB = ... , BC = ...

ⓓ $\overline{AB}$ // .... , $\overline{BC}$ // ....



8 Plot the following points on the coordinate plane, then answer:


X (2 , 3) , Y (4 , 1)
Z (6 , 3) , L (4 , 8)



(a) Connect the points in the following order:

X → Y → Z → L → X

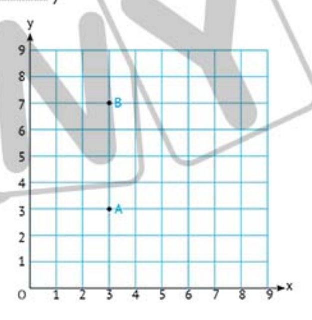
(b) What is the name of the resulting figure? ....

(c) XY = ..., XL = ...

9 Use the following coordinate grid to complete:

(a) Record the ordered pairs for points A and B:

A (.......... , ...) , B (.......... , ...)



(b) Draw a line connecting the two points.

(c) Place point C to create an isosceles right triangle with the right angle at point A.

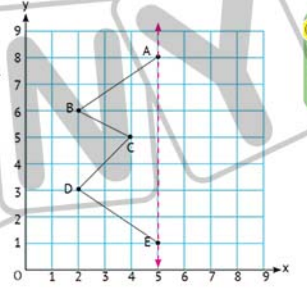
C (.......... , ...)

Unit 10

10 **On the following coordinate plane, plot the points:**

F, G, and H to make a figure that is symmetrical along the vertical red line drawn on the coordinate plane.
Point F should follow Point E.
Connect point H to point A to close the shape.
Then, list the coordinates of F, G, and H.

F (........ , ...) , G (........ , ...)
H (........ , ...)



11 **Complete the following sentences:**

ⓐ In the ordered pair (6 , 5), the x-coordinate is .... and the y-coordinate is ....

ⓑ The ordered pair representing the origin is (........ , ...).

ⓒ The point of intersection of the x-axis with the y-axis is called ....

ⓓ The vertical number line in the coordinate plane is called ....

ⓔ The horizontal number line in the coordinate plane is called ....

ⓕ To move from point (1 , 5) to point (1 , 1), we move .... the y-coordinate .... unit(s).

Assessment on Lessons 5-7

Unit 10

1 Choose the correct answer:

ⓐ The point .... lies on the x-axis. ((5 , 0) or (0 , 5) or (1 , 5) or (5 , 1))

ⓑ A .... is a quadrilateral with all right angles and all its sides are equal. (rhombus or rectangle or square or kite)

ⓒ A triangle whose side lengths are .... cm, 5 cm, and 5 cm is an equilateral triangle. (5 or 10 or 3 or 15)

ⓓ $\frac{36}{48} = \frac{......}{......}$ (In the simplest form) $(\frac{12}{16}$ or $\frac{9}{12}$ or $\frac{6}{8}$ or $\frac{3}{4})$

ⓔ $2\frac{1}{4}$ hours = ... minutes. (27 or $\frac{9}{4}$ or 135 or 225)

2 Complete the following:

ⓐ $6 \times \frac{3}{7} = 2 \times \frac{......}{......}$

ⓑ $\frac{1}{2} \div 4 =$ ....

ⓒ The rectangle whose dimensions are $2\frac{1}{2}$ cm and 3 cm, its area is .... cm^2.

ⓓ The .... - axis is the horizontal number line in the coordinate plane.

ⓔ The number of axes of symmetry of a rectangle is ....

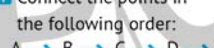
3 Answer the following:

ⓐ Safaa has a 3-meter strip of fabric. She wants to divide it into parts of $\frac{1}{4}$ meters each. How many parts will she get? ....

ⓑ Locate the following points on the coordinate grid, then answer:

A (2 , 2) , B (5 , 2)
C (6 , 4) , D (3 , 4)

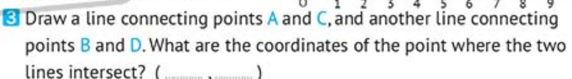
1 Connect the points in the following order:



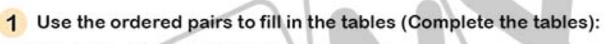
A → B → C → D → A

2 What is the name of the resulting figure? ....

3 Draw a line connecting points A and C, and another line connecting points B and D. What are the coordinates of the point where the two lines intersect? (........ , ...)



Lesson 8



1 **Use the ordered pairs to fill in the tables (Complete the tables):**

ⓐ (1 , 2) , (2 , 3) , (3 , 4) , (4 , 5) , (5 , 6)

x-values	1	2	3	......	......
y-values	......	......	......	......	......

ⓑ (2 , 5) , (4 , 7) , (6 , 9) , (8 , 11) , (10 , 13)

x-values	......	......	......	......	......
y-values	......	......	......	......	......

2 **Identify the pattern of x-values and y-values, the write the represented ordered pair:**

ⓐ

x-values	2	3	4	......	......	......
y-values	3	4	5	......	......	......

(...... , ...) , (...... , ...) , (...... , ...) ,

(...... , ...) , (...... , ...) , (...... , ...)

ⓑ

x-values	1	3	5	......	......	......
y-values	2	6	10	......	......	......

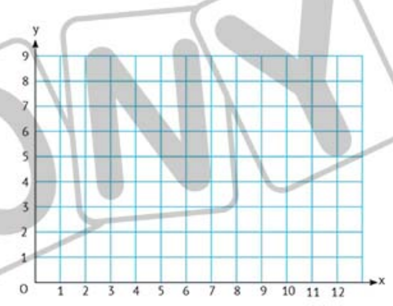
(...... , ...) , (...... , ...) , (...... , ...) ,

(...... , ...) , (...... , ...) , (...... , ...)

3 Represent the following tables on the coordinate plane:

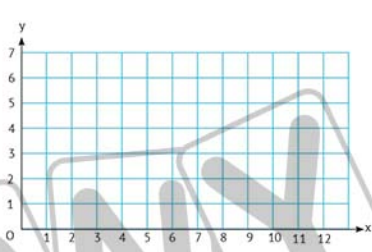
ⓐ

x-values	y-values
1	4
2	5
3	6
4	7
5	8
6	9



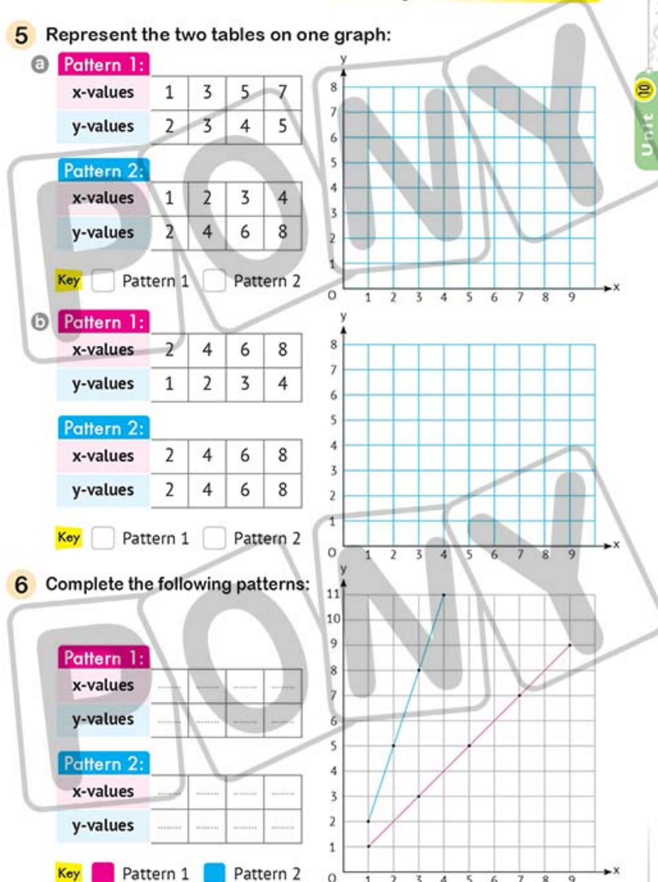
ⓑ

x-values	y-values
1	1
3	2
5	3
7	4
9	5
11	6



4 Use the following coordinate plane to complete the table:

x-values	y-values
....	....
....	....
....	....
....	....
....	....



5 Represent the two tables on one graph:

ⓐ **Pattern 1:**

x-values	1	3	5	7
y-values	2	3	4	5

Pattern 2:

x-values	1	2	3	4
y-values	2	4	6	8

Key ☐ Pattern 1 ☐ Pattern 2

ⓑ **Pattern 1:**

x-values	2	4	6	8
y-values	1	2	3	4

Pattern 2:

x-values	2	4	6	8
y-values	2	4	6	8

Key ☐ Pattern 1 ☐ Pattern 2

6 Complete the following patterns:

Pattern 1:

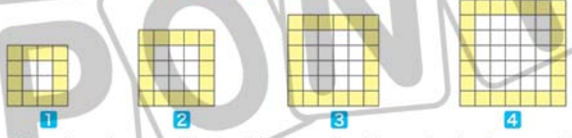
x-values	......	......	......	......
y-values	......	......	......	......

Pattern 2:

x-values	......	......	......	......
y-values	......	......	......	......

Key ■ Pattern 1 ■ Pattern 2

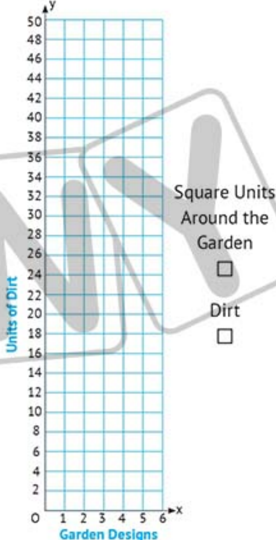
7 **Haitham is a city planner. He is building a collection of square garden beds in a local park. In Haitham's design, the gardens increase in size as you move through the park. Shown are the sketches of his ideas. The yellow squares represent the square tile border around the outside of the garden. The white tiles represent the square units of dirt.**



- Complete the two tables, and then use the information in the two tables you completed to determine the coordinates of the designs and the number of tiles:

Garden Design, x	Number of Yellow Units, y
1	12
2	16
3	....
4	....
5	....
6	....

Garden Design, x	Number of White Units, y
1	12
2	16
3	....
4	....
5	....
6	....



Assessment on Lesson 8

Unit 10

1 Complete the following:

ⓐ $3\frac{2}{5} + 2\frac{1}{3} =$ ....

ⓑ $7\frac{1}{4} - 3\frac{3}{4} =$ ....

ⓒ $3\frac{1}{5} \times 1\frac{7}{8} =$ ....

ⓓ $7 \div 2 =$ ....

ⓔ $3\frac{7}{4} = 4\frac{\cdots}{\cdots}$

2 Complete the following order pairs and table:

(........ , 4) , (2 , ...) , (........ , 8) , (4 , ...)

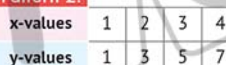
x-values	1	....	3	....
y-values	....	6	....	10

3 Represent the two tables on the graph:

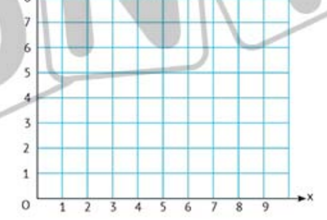
Pattern 1:

x-values	1	3	5	7
y-values	1	2	3	4

Pattern 2:

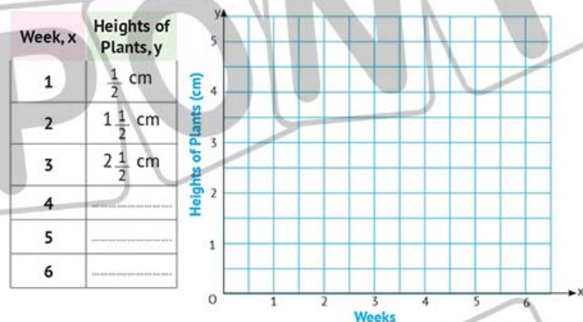


x-values	1	2	3	4
y-values	1	3	5	7



Lesson 9

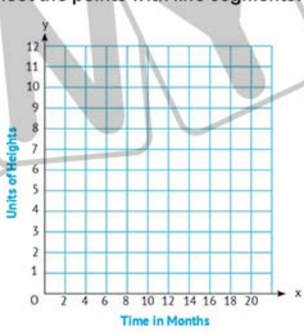
1 Look at the table and fill in the missing values based on the pattern of plants heights in Haitham's garden from one week to the next:



Week, x	Heights of Plants, y
1	$\frac{1}{2}$ cm
2	$1\frac{1}{2}$ cm
3	$2\frac{1}{2}$ cm
4	....
5	....
6	....

2 The following table shows meerkat growth in the Kalahari of South Africa during their first 20 months of life. Graph the data on the coordinate plane and then connect the points with line segments:

Time in Months, x	Units of Heights, y
0	3
2	5
4	6
6	7
8	8
10	9
12	10
14	12
16	12
18	12
20	12



- Answer the following questions:

ⓐ What does the point (0 months, 3 units) mean for a typical meerkat's height?

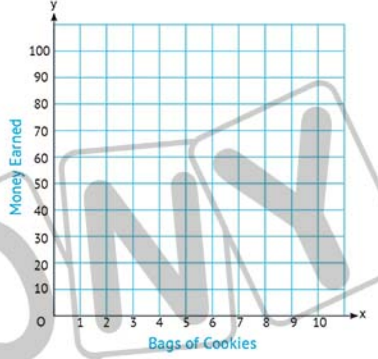
....

ⓑ At what age do meerkats reach their full height?

....

3 **Ola is selling bags of cookies in her neighborhood to make extra money to buy a new bike. She earns 5 LE for each bag of cookies she sells. Complete the following table and then graph the points on the coordinate grid.**

Bags of Cookies, x	Money Earned LE, y
2	
4	
7	
8	
10	



- **Answer the following questions:**

ⓐ How much money does she earn if she sells 5 bags of cookies?

....

ⓑ How many bags does she sell in order to earn 30 LE?

....

4 Salah and Heba work in a typing office; Salah can type 3 pages on the computer per hour, and Heba can type 4 pages on the computer per hour. The following two tables show the number of pages that each of them writes. Complete the two tables and then determine the existing data on the coordinate plane:

Salah (3 pages/hour)	
Number of Hours	Number of Pages
1	3
2	6
3	....
4	....
5	....

Heba (4 pages/hour)	
Number of Hours	Number of Pages
1	4
2	8
3	....
4	....
5	....

Salah ☐

Heba ☐

- **Answer the following questions:**

ⓐ How many pages does Heba type in 4 hours?

....

ⓑ How long does it take Salah to type 15 pages?

....

ⓒ How many more pages does Heba write than Salah writes in 5 hours?

....

Assessment on Lesson 9

Unit 10

1 Complete the following:

ⓐ $\frac{4}{9} = \frac{16}{......}$

ⓑ $3\frac{7}{3} = 4\frac{......}{......}$

ⓒ 30 months = ... years.

ⓓ A .... is a quadrilateral with all sides equal in length and 4 right angles.

ⓔ The type of an equilateral triangle according to the types of its angles is a/an .... triangle.

2 Find the result. Put your answer in the simplest form, if possible:

ⓐ $3\frac{1}{5} + 2\frac{1}{3} =$ ....

ⓑ $7\frac{1}{2} - 3\frac{3}{4} =$ ....

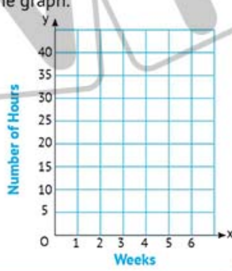
ⓒ $3\frac{1}{3} \times 1\frac{1}{5} =$ ....

ⓓ $8 \div 12 =$ ....

3 Answer the following:

Look at the table below and fill in the unknown y-values based on the pattern of how many hours per week Hussam spends in swimming practice. Locate the coordinate points on the graph.

Week, x	Number of Hours, y
1	5
2	10
3	15
4	....
5	....
6	....



Assessment on Concept 2

Unit 10

First: **Complete the following:**

1. The horizontal number line in the coordinate plane is called the .... -axis.
2. In the ordered pair (5, 3), the y-coordinate is ....
3. Point (6, 0) lies on the .... - axis.
4. Point (0, 0) is called ....
5. The origin is the point of intersection of .... , ...

Second: **Locate the following points on the coordinate grid, then answer:**

A (4, 1), B (6, 3), C (4, 5), D (2, 3)

1. Match the points in the following order:

2. What is the name of the resulting figure?

....

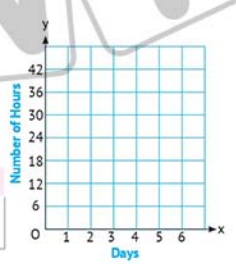
3. $\overline{AB}$ // ...., $\overline{BC}$ // ....

4. Draw $\overline{AC}$ and $\overline{BD}$. What are the coordinates of the point? Where do the two lines intersect? ....

Third: **Answer the following:**

- Observe the table below and fill in the unknown y-values based on the pattern of hours that Galal spends working per day. Mark the coordinate points on the graph and draw a line.

Day, x-axis	1	2	3	4	5	6
Number of Hours, y-axis	6	12	18	......	......	......



Assessment 1 on

First: **Complete the following:**

1. The horizontal number line in the coordinate plane is called the .... -axis.
2. The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.
3. Point (8, 0) lies on the .... - axis.
4. The quadrilaterals that have four sides of equal length are .... and ....
5. The area of a rectangle of length $3\frac{3}{4}$ m and width $2\frac{2}{3}$ m is .... m^2.

Second: **Measure the sides of the following triangle. Identify the types of its angles, then classify it according to the lengths of its sides and the types of its angles:**

1. Lengths of the sides:
   AB= .... cm, BC = ... cm, AC= .... cm.
2. Types of its angles: ⓐ ∠ A is ....
   ⓑ ∠ B is .... ⓒ ∠ C is ....

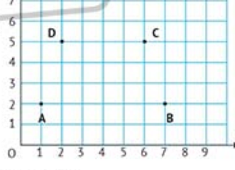
3. The type of the triangle according to the lengths of its sides is ....
4. The type of the triangle according to the types of its angles is ....

Third: **Using the following coordinate grid, answer:**

1. Write the ordered pairs of the points shown:
   A (...., ...) , B (...., ...), C (...., ...), D (...., ...).
2. Match the points in the following order:

A → B → C → D → A

3. What is the name of the resulting figure?
   ....
4. $\overline{AB}$ // ....
5. Draw the possible lines of symmetry for this shape.



Assessment 2 on Unit 10

First: Complete the following:

1. The type of triangle that contains one right angle and two acute angles according to the types of its angles is a/an .... triangle.
2. In the ordered pair (2, 7), the x-coordinate is.......................... .
3. The quadrilaterals that have four right angles are .... and ....
4. The length of a rectangle with a width of $\frac{1}{4}$ cm and an area of 3 cm^2 is .... cm.
5. The point .... is the point of intersection of x-axis and y-axis.

Second: Answer the following:

- Draw a rectangle:

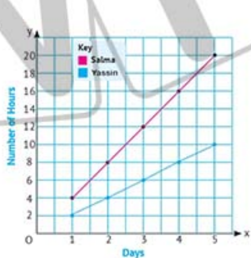
  Its length is $3\frac{1}{2}$ units and its width is 3 units.

  Then find its area.

- Area of the rectangle = ... square units.

Third: Answer the following:

- The following graph shows the total number of study hours for both Salma and Yassin over a period of 5 days. Study the graph, then answer:



  a. What rule that describes the total number hours Salma studied?

  ....

  b. What rule that describes the total number of hours Yassin studied?

  ....

Unit 11 Volume

Concept 11.1 Understanding Volume and Capacity

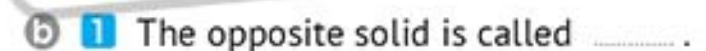
Lessons 1–3

1 Complete the following:

ⓐ 1 The opposite solid is called ....

2 The number of faces is ...., the shape of each face is ....

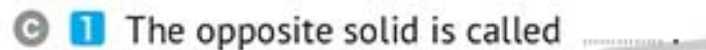
3 Number of edges: ...., number of vertices: ....



ⓑ 1 The opposite solid is called ....

2 The number of faces is ...., the shape of each face is ....

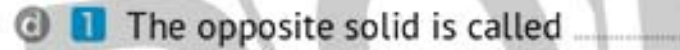
3 Number of edges: ...., number of vertices: ....



ⓒ 1 The opposite solid is called ....

2 The number of faces is ...., the shape of each face is ....

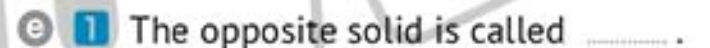
3 Number of edges: ...., number of vertices: ....



ⓓ 1 The opposite solid is called ....

2 The number of faces is ...., the shape of each face is ....

3 Number of edges: ...., number of vertices: ....



ⓔ 1 The opposite solid is called ....

2 The number of faces is ...., the shape of each face is ....

3 Number of edges: ...., number of vertices: ....

f The 3D shape that has two faces, each in the shape of a circle, is ....

g The 3D shape that does not have faces, edges, or vertices is ....

h The 3D shape that has only one face in the shape of a circle is ....

2 Choose the correct answer:

a The number of edges in a cube is .... (6 or 8 or 12 or 5)

b The number of faces of a rectangular prism is.......... . (6 or 8 or 12 or 5)

c The number of vertices of a rectangular prism is .... (6 or 8 or 12 or 5)

d Each face of the cube is in the form of a ....

(square or rectangle or triangle or circle)

e A .... is a 3D shape with one vertex and one face in the shape of a circle. (cylinder or sphere or cone or circle)

f A .... is a 3D shape that has two faces, each in the shape of a circle.

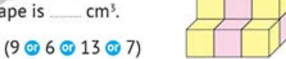
(cylinder or sphere or cone or circle)

g A .... is a 3D shape with 5 faces, one of which is a square and the other one is in the shape of a triangle.

(rectangular prism or cube or square pyramid or cone)

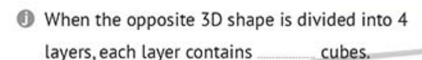
h The volume of the opposite 3D shape is .... cm^3.

(9 or 6 or 13 or 7)



i The volume of the opposite 3D shape is ...... cm^3.

(20 or 16 or 12 or 13)



(j) When the opposite 3D shape is divided into 4 layers, each layer contains .... cubes.

(32 or 16 or 8 or 4)

(k) When the opposite 3D shape is divided into 3 slices, each slice contains .... cubes.

(9 or 21 or 18 or 27)

3 Find the volume (number of cubes) of each of the following shapes, where each cube represents 1 cm³:

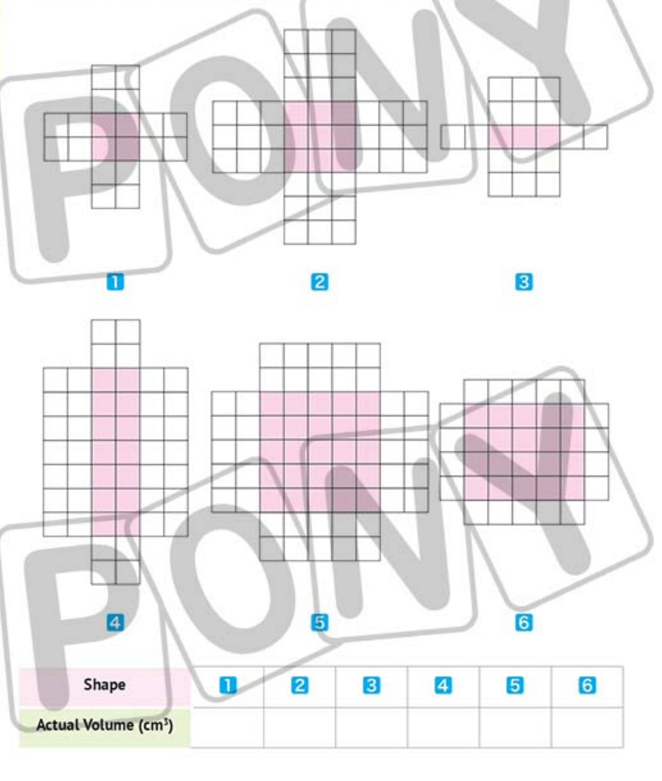
1 2 3

4 5 6

7 8 9

Shape	1	2	3	4	5	6	7	8	9
Volume (cm^3)									

4 **Copy, cut, fold, and paste each of the following shapes to form a box, then find the volume, since each cube is 1 cm³:**



Shape	1	2	3	4	5	6
Actual Volume (cm^3)						

5 Decompose each of the following cuboids into layers or slices in three different ways, and calculate its volume, since each cube represents 1 cm^3:

1 2 3 4

Rectangular Prism	1			2			3			4		
Number of Layers/Slices												
Cubes in Each Layer/Slice												
Volume of the Rectangular Prism												

5 6 7 8

Rectangular Prism	5			6			7			8		
Number of Layers/Slices												
Cubes in Each Layer/Slice												
Volume of the Rectangular Prism												

Assessment on Lessons 1 - 3

Unit 11

1 Choose the correct answer:

a) A three-dimensional shape whose base is a circle is a ....
(cone or square pyramid or sphere or cube)

b) A triangle whose largest angle is a right angle is called a/an .... triangle. (right or acute or obtuse or equilateral)

c) A quadrilateral that has two pairs of parallel sides and four right angles is a ....(rectangle or rhombus or trapezium or parallelogram)

d) A window is in the form of a rectangle, $1\frac{3}{5}$ meters long and $\frac{1}{3}$ meters wide then its area is .... square meters. ($\frac{15}{8}$ or $\frac{8}{15}$ or $\frac{9}{15}$ or $\frac{15}{9}$)

e) The triangle whose side lengths are 5 cm, 4 cm, and 3 cm is called a/an .... triangle. (equilateral or isosceles or scalene or right)

2 Complete the following:

a) The number of edges of a cube is .... edges.

b) The volume of the opposite solid is .... cubes.

c) $\frac{2}{3}$ of 9 tiles is .... tiles.

d) $2\frac{3}{5} \times \frac{5}{9} =$ ....

e) $\frac{1}{3} \div 5 =$ ....

3 Copy the following shape, cut it out, fold it and paste it to make a box:

a) The actual volume of the box is .... cm^3.

b) When dividing the resulting shape into layers, then:

1. The number of layers is .... layers.
2. The number of cubes in each layer is .... cube(s).

c) When dividing the resulting shape into slices, then:

1. The number of slices is .... slices.
2. The number of cubes in each slice is .... cube(s).

Assessment on Concept 1

Unit 11

First: **Choose the correct answer:**

1. A .... is a three-dimensional shape with two faces in the form of a circle. (cone or cylinder or sphere or square pyramid)
2. A .... is a two-dimensional figure with 4 sides and 4 right angles. (rhombus or parallelogram or rectangle or kite)
3. A rectangular prism is a three-dimensional shape that contains .... faces. (12 or 8 or 6 or 9)
4. A parallelogram is a two-dimensional figure that has .... of parallel sides. (1 pair or 2 pairs or 3 pairs or 4 pairs)
5. The corresponding figure is a three-dimensional figure consisting of .... cubes. (12 or 16 or 8 or 10)

Second: **Complete the following:**

1. A .... is a 3D shape that has only one face in the shape of a circle.
2. A .... is a two-dimensional figure that has only one pair of parallel sides.
3. A cube is a three-dimensional shape with .... faces, and each face is in the form of a ....
4. .... is the amount of space occupied by a three-dimensional shape.
5. .... is the amount of liquid a container can hold.

Third: **Copy the following shape, cut it out, fold it, and paste it to make a box:**

1. The actual volume of the box is .... cm^3.
2. When dividing the resulting shape into layers, then:
   - a) Number of layers = ... layers.
   - b) Number of cubes in each layer: = ... cubes.
3. When dividing the resulting shape into slices, then:
   - a) Number of slices = ... slices.
   - b) Number of cubes in each slice = ... cubes.

Concept 11.2 Measuring Volume

Lessons 4&5

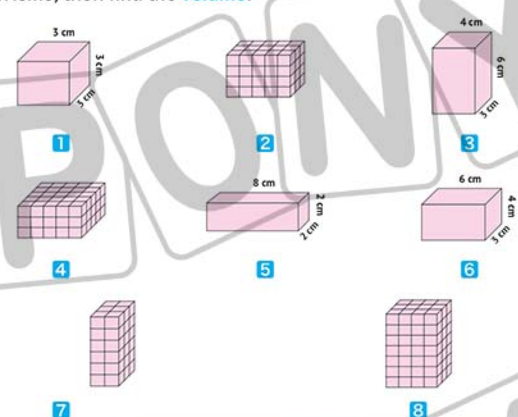
1 Complete the following table:

	Length	Width	Height	Volume of the Rectangular Prism
a	9 cm	.... cm	2 cm	72 cm^3
b	12 cm	5 cm	.... cm	240 cm^3
c	.... cm	5 cm	10 cm	300 cm^3
d	.... cm	2 cm	5 cm	80 cm^3
e	8 cm	2 cm	3 cm	.... cm^3
f	5 cm	4 cm	6 cm	.... cm^3

2 Complete the following table:

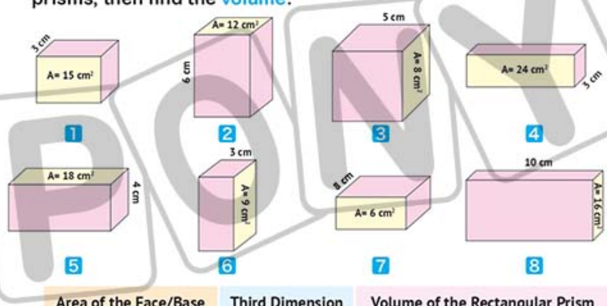
	Area of the Face/Base	Third Dimension	Volume of the Rectangular Prism
a	.... cm^2	5 cm	70 cm^3
b	12 cm^2	.... cm	60 cm^3
c	24 cm^2	5 cm	.... cm^3
d	16 cm^2	.... cm	48 cm^3
e	.... cm^2	7 cm	140 cm^3
f	9 cm^2	3 cm	.... cm^3

3 Record the **dimensions** of each of the following rectangular prisms, then find the **volume**:



	Length	Width	Height	Volume of the Rectangular Prism
1	.... cm	.... cm	.... cm	.... cm^3
2	.... cm	.... cm	.... cm	.... cm^3
3	.... cm	.... cm	.... cm	.... cm^3
4	.... cm	.... cm	.... cm	.... cm^3
5	.... cm	.... cm	.... cm	.... cm^3
6	.... cm	.... cm	.... cm	.... cm^3
7	.... cm	.... cm	.... cm	.... cm^3
8	.... cm	.... cm	.... cm	.... cm^3

4 Record the dimensions of each of the following rectangular prisms, then find the volume:



	Area of the Face/Base	Third Dimension	Volume of the Rectangular Prism
1	.... cm²	.... cm	.... cm³
2	.... cm²	.... cm	.... cm³
3	.... cm²	.... cm	.... cm³
4	.... cm²	.... cm	.... cm³
5	.... cm²	.... cm	.... cm³
6	.... cm²	.... cm	.... cm³
7	.... cm²	.... cm	.... cm³
8	.... cm²	.... cm	.... cm³

5 A rectangular prism has a volume of 400 cm³ and its base area is 80 cm². Find its height.

....

6 A rectangular prism has a volume of 120 cm³, a length of 8 cm and a height of 5 cm. Find its width.

....

7 Which is larger? A rectangular prism that has dimensions of 5 cm, 10 cm, and 4 cm, or a rectangular prism that has an area of one face 60 cm² and its third dimension is 7 cm?

....

Assessment on Lessons 4&5

Unit 11

1 Complete the following:

ⓐ A rectangular prism has a volume of 240 cm^3 and its base area is 80 cm^2, then its height is .... cm.

ⓑ A .... is a quadrilateral with two pairs of congruent adjacent sides.

ⓒ A .... is the point of intersection of the x-axis and y-axis in the coordinate plane.

ⓓ The type of triangle that contains one right angle and two acute angles, according to the types of its angles is a/an .... triangle.

ⓔ A .... is a solid with one circle-shaped face and one vertex.

2 Find the result. Put your answer in the simplest form, if possible:

ⓐ $4\frac{2}{3} + 3\frac{1}{2} =$ ....

ⓑ $7\frac{1}{2} - 3\frac{3}{4} =$ ....

ⓒ $3\frac{1}{8} \times 2\frac{1}{5} =$ ....

ⓓ $\frac{1}{2} \div 5 =$ ....

3 Answer the following:

ⓐ Plot the following points on the coordinate grid, and answer:

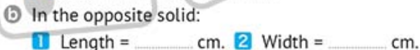
A (1 , 1) , B (5 , 1) , C (8 , 4) , D (4 , 4)

- Connect the points in the following order:

A → B → C → D → A

1 What is the name of the resulting shape? ....

2 $\overline{AB}$ // .... , $\overline{BC}$ // ....

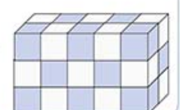


ⓑ In the opposite solid:

1 Length = ... cm. 2 Width = ... cm.

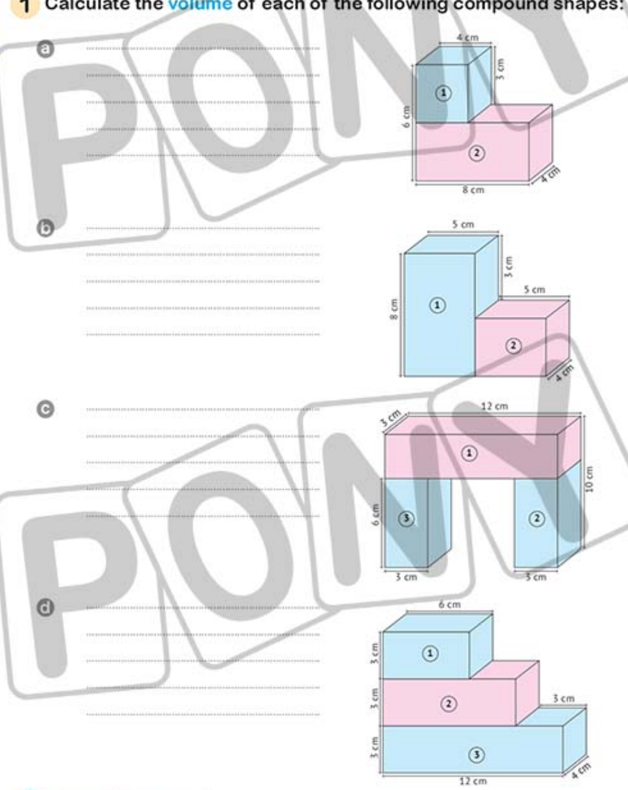
3 Height = ... cm.

4 Volume = ... cm^3.



Lessons 6&7

1 **Calculate the volume of each of the following compound shapes:**



a ....

....

....

....

....

b ....

....

....

....

....

c ....

....

....

....

....

d ....

....

....

....

....

2 Osman built a planter box for his backyard. The length of the planter box was 150 centimeters. The width was 90 cm, and the height of the box was 120 cm. Osman poured soil into the box up to the 100 cm height line. What is the volume of the planter box? What is the volume of the soil?

3 Fares built a small planter box for his window. He planned to fill it to the top with 12,000 cubic centimeters of soil. The base of the planter box measured 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?

4 Nahla decided to build planter boxes. She wanted two boxes with different dimensions, but the same volume of 20,000 cubic centimeters.

a. Show two ways she could build these planters.

b. Record equations to match each prism.

5 Rami wanted to build a new shed. He had a spot outside his house that had an area of 4 meters in length by 3 m width. He needed the new shed to have a volume of 72 m^3. How tall will the shed need to be?

Theme 4

6 Two boxes of equal volume, the first box has dimensions of 8 cm, 6 cm and 3 cm, and the other box has a base area of 16 cm^2. Find the height of the other box.

7 Which is greater in volume?
A rectangular prism whose length is 8 cm, its width is 5 cm, and its height is 4 cm, or a rectangular prism whose base area is 80 cm^2 and its height is 3 cm?

8 A cardboard box has the dimensions 30 cm, 30 cm, and 15 cm. How many candies can fit inside it, if each piece is in the shape of a rectangular prism with dimensions 5 cm, 5 cm and 3 cm?

Assessment on Lessons 6&7

Unit 11

1 Complete the following:

ⓐ $\frac{6}{9} = \frac{\dots}{36}$

ⓑ $4 \times \frac{3}{7} = 2 \times \frac{\dots}{\dots}$

ⓒ $\frac{1}{3} \div 8 = \frac{1}{3} \times \frac{\dots}{\dots}$

ⓓ The volume of the rectangular prism (V) = ...

ⓔ The vertical number line in the coordinate plane is called the ...... - axis.

2 Choose the correct answer:

ⓐ The .... is a solid that has 5 faces, one of which is in the form of a square and the rest in the form of a triangle.
(cube or rectangular prism or square pyramid or cone)

ⓑ If the volume of a rectangular prism is 60 cm^3 and its base area is 15 cm^2, then its height is .... cm. (4 or 75 or 45 or 900)

ⓒ The .... is a quadrilateral with four equal sides.
(rectangle or trapezium or rhombus or parallelogram)

ⓓ The point .... lies on the y-axis in the coordinate plane.
((1 , 1) or (5 , 0) or (0 , 5) or (5 , 5))

ⓔ The type of triangle whose side lengths are 5 cm, 6 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.
(equilateral or scalene or isosceles or acute)

3 Answer the following:

ⓐ Nihal has 9 friends. She made 3 pizza pies for her friends and she wants to divide these pies equally among them.
What is the share of each of them in pies?

....

ⓑ A car for transporting goods has a box with dimensions of 3 m, 2 m and 150 cm. How many small boxes can be placed inside if the box has dimensions of 50 cm, 30 cm, and 40 cm?

....

Assessment on Concept 2

Unit 11

First: **Complete the following:**

1. A rectangular prism whose length is 5 cm, its width is 2 cm, and its height is 3 cm, then its volume is .... cm^3.
2. A rectangular prism has a base area of 15 cm^2 and a height of 6 cm, so its volume is .... cm^3.
3. A rectangular prism has a volume of 240 cm^3, a length of 6 cm and a width of 4 cm, then its height is .... cm.
4. A rectangular prism whose length is equal to its width and height, and its volume is 27 cm^3, then its length is .... cm.

Second: **Calculate the volume of the following compound shape:**

- ....
- ....
- ....
- ....

Third: **Record the dimensions of the following rectangular prism, then find its volume:**

- Length = ... cm.
- Width = ... cm.
- Height = ... cm.
- Volume = ... cm^3.

Fourth: **Answer the following:**

- Hossam has a large rectangular prism-shaped chocolate mold that is 30 cm long, 10 cm wide, and 5 cm high. He wants to divide it into 15 equal parts. What is the volume of each of the small parts?

....

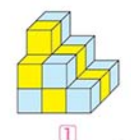
....

Assessment 1 on

First: **Choose the correct answer:**

1. The number of edges of a rectangular prism is .... (6 or 8 or 12 or 5)
2. Each face of the cube is in the shape of a ....
   (square or rectangle or triangle or circle)
3. A .... is a 3D shape with one vertex and one face in the shape of a circle. (cylinder or sphere or cone or circle)
4. A .... is a 3D shape that has 5 faces, one of which is square and the other faces are triangles. (rectangular prism or cube or square pyramid or cone)
5. When the corresponding 3D shape is divided into 3 slices, each slice contains .... cubes. (12 or 18 or 6 or 8)

Second: **Find the volumes of the following 3D shapes:**



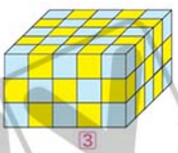
1

Volume = ... cm^3.

4 cm
6cm
3cm

2

Volume = ... cm^3.



3

Volume = ... cm^3.

Third: **Answer the following:**

1. Muhamed has 24 pieces of wood, each in the form of a rectangular prism of equal dimensions (cubes) of 3 cm in length.
   What is the size of these pieces combined?
   ....
2. If Muhamed wants to put these pieces together to form a rectangular prism consisting of 3 layers. What is the number of pieces in each layer and what is the height of this shape?
   ....

Assessment 2 on Unit 11

First: **Choose the correct answer:**

1. The number of faces of a cube is .... (6 or 8 or 12 or 5)
2. The number of vertices of a rectangular prism is .... (6 or 8 or 12 or 5)
3. A .... is a 3D shape with two circular faces. (cylinder or sphere or cone or circle)
4. A .... is a three-dimensional shape that does not contain faces, edges, or vertices. (cylinder or sphere or cone or circle)
5. The volume of the opposite figure is .... cubic centimeters. (12 or 20 or 15 or 11)

Second: **Calculate the volume of the following compound shape:**

....

....

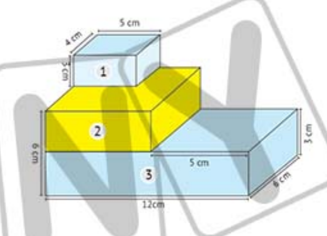
....

....

....

....

....



Third: **Answer the following:**

- Two pieces of cheese, each is in the shape of a rectangular prism, of equal volume. The first piece is 12 cm long, 10 cm wide and 8 cm high. If the area of the base of the second piece is 160 cm^2, what is the height of the second piece?

....

....

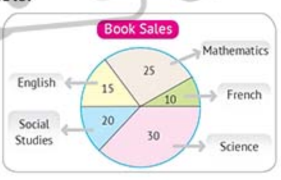
Concept 12.1 Understanding Pie Charts

Lessons 1-3

1 The following pie chart shows the book sales in a library:

ⓐ Study the chart and complete the table:

Books	Frequency	Fraction	Decimal
Mathematics	....	....	....
French	....	....	....
Science	....	....	....
Social Studies	....	....	....
English	....	....	....



ⓑ Answer the following questions:

1. What are the best selling books? ....
2. What are the least sold books? ....
3. How many more science books are sold than English books? ....
4. What is the total number of the sold mathematics and French books? ....

2 The following table shows the grades of 48 students in Mathematics:

Grade	Excellent	Very Good	Good	Pass	Weak
Number of Students	16	12	8	6	6

• Shade the pie chart using the data in the table, then write the fraction that represents each grade:

1. Excellent: ....
2. Very Good: ....
3. Good: ....
4. Pass: ....
5. Weak: ....

Students' Grades

☐ Excellent
☐ Very Good
☐ Good
☐ Pass
☐ Weak

3 In the opposite pie chart:

ⓐ Shade $\frac{1}{6}$ of the circle in yellow, $\frac{1}{3}$ of the circle in blue, and $\frac{1}{2}$ of the circle in red.

ⓑ If the pie chart represents 24 pupils:

1 How many pupils does the yellow part represent? ....

2 How many pupils does the blue part represent? ....

ⓒ What is the decimal represented by the red color? ....

4 In the corresponding pie chart:

ⓐ Shade $\frac{3}{4}$ of the circle in green, $\frac{1}{8}$ of the circle in blue, and $\frac{1}{8}$ of the circle in red.

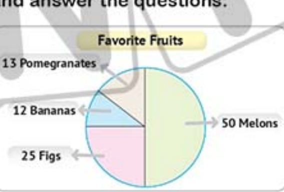
ⓑ If the pie chart represents 40 pupils:

1 How many pupils does the blue part represent? ....

2 How many pupils does the red part represent? ....

ⓒ What is the decimal represented by the green color? ....

5 Analyze the following pie chart and answer the questions:



ⓐ What fraction represents the number of children who participated in the survey and preferred melons? ....

ⓑ What fraction represents the number of children who participated in the survey and preferred figs? ....

ⓒ How many children participated in the survey? ....

Assessment on Lessons 1–3

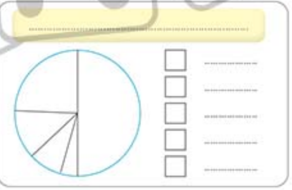
Unit 12

1 **The following table shows the favorite ice cream flavor of 50 children:**

ⓐ Write the decimal for each flavor, then shade the pie chart.

ⓑ Complete the parts of the pie chart using the data in the table, type the title and key.

Flavor	Frequency	Decimal
Mango	5	....
Vanilla	25	....
Mastic	6	....
Chocolate	12	....
Hazelnut	2	....



2 **The following pie chart represents a group of people's opinion of what kind of building the city they live in needs. Answer the questions below:**

ⓐ How many people took part in the survey?

....

ⓑ What fraction is the number of people who participated in the survey and think that the city needs a post office? ....

ⓒ What decimal represents the number of people who participated in the survey and think that the city needs a mosque? ....

ⓓ How many more people think the city needs a library than those who think the city needs a cafe? ....

ⓔ What is the sum of the number of people who think that the city needs a public park and those who think that the city needs a post office?

....

Assessment on Unit 12

Answer the following:

1. The following pie chart shows the favorite game of a number of pupils.

   a. Which game do most pupils prefer? ....

   b. Which game is preferred by the least number of pupils? ....

   c. What fraction represents the pupils who prefer basketball? ....

2. Shade $\frac{1}{3}$ of the circle in blue, and $\frac{1}{4}$ of the circle in black.

   a. What fraction does the uncolored part represent?

   ....

   b. What decimal is represented by the part colored in black?

   ....

3. The following table represents the results of a questionnaire about the most preferred fruit by a group of students:

Fruit	Mango	Apple	Banana	Orange
Number of Students	18	9	6	3

- Shade the pie chart using the data in the table, then write the fraction that represents each fruit, and complete:

   a. The fraction representing the number of students who prefer:
   Mango: ...., Apple: ....,
   Banana: ...., Orange: ....

   b. The total number of students who participated in the questionnaire is .... students.

Final Revision
on Theme 3
Units 7, 8&9

First: Choose the correct answer:

1. Which of the following is equivalent to $\frac{15}{45}$? ($\frac{1}{4}$ or $\frac{3}{6}$ or $\frac{1}{3}$ or $\frac{2}{3}$)

2. The two like denominator fractions of $\frac{3}{4}$ and $\frac{1}{3}$ are .... ($\frac{3}{12}, \frac{1}{12}$ or $\frac{3}{12}, \frac{4}{12}$ or $\frac{9}{12}, \frac{4}{12}$ or $\frac{9}{12}, \frac{1}{12}$)

3. The LCM of the denominators of $\frac{1}{2}$ and $\frac{2}{3}$ is .... (6 or 12 or 24 or 36)

4. The smallest like denominator of $\frac{5}{8}$ and $\frac{1}{5}$ is .... (20 or 12 or 10 or 40)

5. $\frac{16}{48}$ = ... (In the simplest form) ($\frac{8}{24}$ or $\frac{4}{12}$ or $\frac{2}{6}$ or $\frac{1}{3}$)

6. If $m + 2\frac{1}{3} = 5\frac{5}{6}$, then m = ... ($3\frac{4}{6}$ or $3\frac{1}{3}$ or $3\frac{1}{2}$ or $3\frac{1}{4}$)

7. $\frac{3}{4}$ year = ... months. (3 or 4 or 6 or 9)

8. 80 minutes = ... hours. ($1\frac{1}{2}$ or $1\frac{1}{3}$ or $1\frac{1}{4}$ or $1\frac{1}{6}$)

9. $\frac{3}{4} \times 6$ = ... $\times 3$ ($\frac{3}{4}$ or $\frac{2}{3}$ or $\frac{3}{2}$ or $\frac{6}{9}$)

10. $3\frac{7}{4} = 4\frac{\dots}{\dots}$ ($\frac{19}{4}$ or $\frac{15}{4}$ or $\frac{11}{4}$ or $\frac{3}{4}$)

11. $\frac{3}{4} \times$ .... $= \frac{3}{8}$ ($\frac{1}{4}$ or $\frac{2}{2}$ or $1\frac{1}{2}$ or $\frac{1}{2}$)

12 $45 \div 60 =$ .... ($1\frac{15}{60}$ or $\frac{3}{4}$ or $4\frac{5}{6}$ or $1\frac{1}{3}$)

13 .... $\div \frac{1}{5} = 15$ ($\frac{1}{10}$ or 10 or 3 or $\frac{1}{3}$)

14 .... $\times 8 = 1$ (0 or 1 or $\frac{1}{8}$ or 8)

15 $9 \div 4 =$ .... ($2\frac{1}{4}$ or $\frac{4}{9}$ or $8\frac{1}{4}$ or $4\frac{5}{9}$)

16 $\frac{1}{3} \div$ .... $= \frac{1}{6}$ (2 or $\frac{1}{2}$ or 3 or $\frac{1}{3}$)

Second: Complete the following:

1 The LCM of the denominators of $\frac{5}{10}$ and $\frac{3}{4}$ is ....

2 The smallest like denominator of $\frac{3}{4}$ and $\frac{5}{6}$ is ....

3 The two like denominator fractions of $\frac{6}{8}$ and $\frac{2}{3}$ using LCM are ....

4 $\frac{3}{8} + \frac{1}{2} =$ ....

5 $\frac{5}{6} - \frac{1}{4} =$ ....

6 $1 -$ .... $= \frac{3}{7}$

7 $\frac{5}{6} +$ .... $= 1$

(In the simplest form)

8 $\frac{12}{48} =$ ....

9 $3\frac{5}{8} = \frac{....}{....}$

10 $\frac{15}{4} =$ .... $\frac{....}{....}$

11 The subtraction problem representing the opposite number line

is .... − ....

12 $2\frac{1}{4}$ minutes = ... minutes, ... seconds.

13 30 months = ... years.

14 $\frac{3}{4}+\frac{3}{4}+\frac{3}{4}+\frac{3}{4}+\frac{3}{4}=$ ...... $\times\frac{3}{4}$

15 $\frac{3}{4}\times$ ...... $=\frac{3}{8}$

16 $\frac{3}{8}\times\frac{4}{9}=\frac{1}{\dots}\times\frac{1}{\dots}$

17 $3\frac{2}{3}\times$ ...... $=\frac{\dots}{3}\times\frac{5}{2}$

18 $5\div$ ...... $=\frac{1}{3}$

19 ...... $\div\frac{1}{3}=6$

20 ...... $\div 4=\frac{1}{8}$

Third: **Find the result. Simplify your answer, if possible:**

1 $\frac{3}{8}+\frac{3}{4}=$ ....

2 $3\frac{4}{5}+2\frac{1}{2}=$ ....

3 $\frac{5}{6}-\frac{2}{3}=$ ....

4 $5\frac{3}{4}-2\frac{5}{6}=$ ....

5 $\frac{3}{8}\times\frac{4}{6}=$ ....

6 $3\frac{1}{3}\times 1\frac{1}{5}=$ ....

7 $2\frac{5}{8}\times\frac{6}{7}=$ ....

8 $15\div 45=$ ....

9 $3\div\frac{1}{4}=$ ....

10 $\frac{1}{5}\div 2=$ ....

Fourth: **Answer the following:**

1 Omnia purchases $\frac{8}{9}$ kilogram of fava beans. She uses $\frac{3}{4}$ kg of the fava beans to make falafel. How many kilograms of fava beans are left?

....

2 Wafaa's flower garden consists of $\frac{3}{7}$ cornflower and $\frac{2}{5}$ poppy. The rest of the garden is filled with roses. What fraction of Wafaa's garden is filled with roses?

....

3 In the pond, $\frac{1}{3}$ of the lilies are white, and $\frac{1}{4}$ of the lilies are pink. The remaining lilies are blue. What fraction of the lilies are blue?

....

4 Use 9 tiles, $\frac{1}{3}$ of which are red, and the remaining tiles are yellow.

a How many tiles are red? ......

b Therefore, $\frac{1}{3}$ of 9 tiles is ...... tiles.

c How many tiles are yellow? ......

d Therefore, $\frac{2}{3}$ of 9 tiles is ...... tiles.

5 Use the fewest tiles possible to build an array that is $\frac{1}{4}$ blue, $\frac{2}{5}$ green, $\frac{1}{10}$ yellow, and the rest red.

a How many tiles did you use altogether? ....

b How many tiles are included in $\frac{1}{4}$ of the array? ....

c How many tiles are equal to $\frac{2}{5}$ of the array? ....

d What fraction of the array represents two tiles? ....

6 In a pond, $\frac{1}{3}$ of the lilies are white, and $\frac{1}{4}$ of the lilies are pink. The remaining 30 lilies are blue. How many lilies are in the pond altogether?

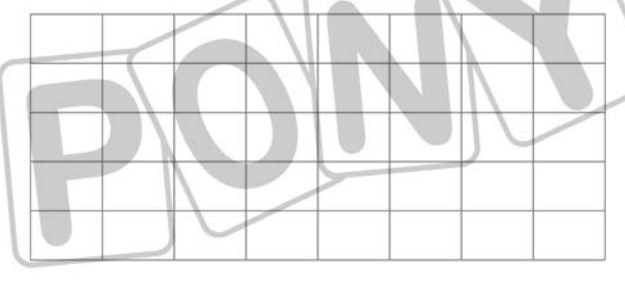
....

7 Rania uses $\frac{3}{4}$ of her monthly salary to pay for her food, rent, utilities, and transportation. After these expenses, she is left with 1,250 LE. What is Rania's monthly salary?

....

8 Ziad had 40 palm trees for sale at his nursery. He sold $\frac{2}{5}$ of the trees on Monday. He sold $\frac{1}{4}$ of the remaining trees on Tuesday. On Wednesday, he sold 12 of what was left. How many date palm trees did Ziad have remaining to sell on Thursday?

(Draw diagrams or use color tiles to answer.)



....

9 Osman expected his assignment to take $\frac{4}{5}$ of an hour. He completed it in $\frac{3}{4}$ of an hour. In how many fewer minutes did Osman complete his assignment than he expected?

....

10 Abeer is mixing juice for a celebration. She mixes $5\frac{3}{4}$ liters of fruit juice concentrate with $1\frac{1}{2}$ L more water than fruit juice concentrate. She needs 12 L of the mixture for the celebration. Does she have enough?

....

11 On Monday, Afaf spent $5\frac{2}{3}$ hours researching papyrus plants for her presentation. The next day, she spent $\frac{11}{12}$ of an hour less putting her presentation together. Over both days, how many hours did Afaf spend on her presentation?

....

12 Aya purchased a bag of tomatoes from the market that has a mass of $2\frac{1}{3}$ kilograms. Her brother, Ameen, purchased a bag of potatoes that has a mass $1\frac{1}{2}$ times more than Aya's bag of tomatoes. What is the mass of Ameen's bag of potatoes?

....

13 Moustafa is harvesting sugarcane. He can harvest $3\frac{3}{4}$ kilograms of sugarcane in 1 hour. If he plans to work for $2\frac{1}{2}$ hours, how much sugarcane will he harvest?

....

14 Farida is reading a book. She can usually read $20\frac{1}{2}$ pages in 1 hour. If she plans to read for 1 hour and 15 minutes, how many pages will she read?

....

15 On Tuesday morning, Farha's Flower Shop made 7 bouquets of daffodils, which were $\frac{1}{5}$ of the number of bouquets ordered for that day. How many total bouquets were ordered from Farha's Flower Shop on Tuesday?

....

16 Gehad mixes $\frac{1}{2}$ liter of blue paint with $\frac{3}{4}$ L of red paint to make a shade of purple paint. How many liters of purple paint does Gehad make?

....

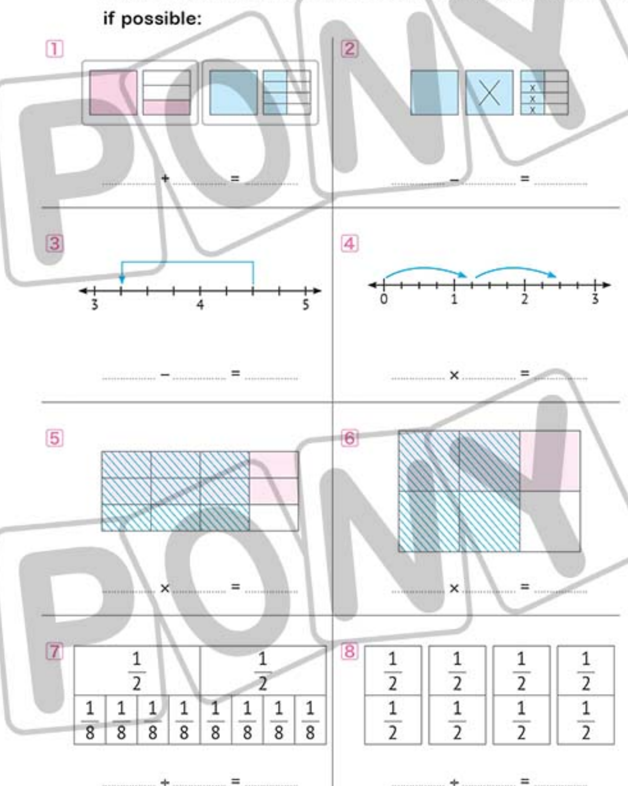
17 Manal has $2\frac{1}{2}$ hours to complete her schoolwork. She finishes her math homework in $\frac{3}{4}$ of an hour. How much time remains for the rest of her schoolwork?

....

18 After Hoda's birthday party, $\frac{1}{5}$ of the food remains. Hoda gives $\frac{1}{2}$ of the remaining food to her aunt. What fraction of the total amount of food did her aunt receive?

....

Fifth: **Study the following models, write down the problems they represent, and then find the result. Simplify your answers, if possible:**



Final Revision
on Theme 4
Units 10, 11&12

First: **Choose the correct answer:**

1. A .... is a quadrilateral in which all sides are of equal length.
   (parallelogram or rhombus or rectangle or trapezium)
2. A .... is a quadrilateral in which all angles are right angles.
   (rectangle or rhombus or parallelogram or trapezium)
3. A .... is a quadrilateral with one pair of acute angles and one pair of obtuse angles.
   (square or rectangle or trapezium or parallelogram)
4. A .... is a quadrilateral with two pairs of parallel sides, and all of its sides are equal.
   (rectangle or rhombus or trapezium or parallelogram)
5. A .... is a quadrilateral with two pairs of congruent adjacent sides, two acute angles, and two obtuse angles.
   (rectangle or rhombus or trapezium or kite)
6. A .... is a quadrilateral with two pairs of parallel sides, and all of its angles are right angles.
   (rectangle or rhombus or trapezium or parallelogram)
7. A .... is a quadrilateral with two pairs of parallel sides, 4 right angles, and all its sides are equal in length.
   (rhombus or trapezium or parallelogram or square)
8. A parallelogram with four right angles is a ....
   (rectangle or rhombus or trapezium or parallelogram)

9 A parallelogram with four equal sides is a ....

(rectangle or rhombus or trapezium or parallelogram)

10 A rectangle with four equal sides is a ....

(square or rhombus or trapezium or parallelogram)

11 A rhombus with four right angles is a ....

(square or rectangle or trapezium or parallelogram)

12 A triangle whose sides are .... cm, 4 cm, and 7 cm is a scalene triangle.

(4 or 7 or 8)

13 A triangle whose side lengths are 8 cm, 5 cm, and .... cm is an isosceles triangle. (6 or 5 or 3 or 4)

14 A triangle whose side lengths are 4 cm, 4 cm, and .... cm is an equilateral triangle. (3 or 5 or 7 or 4)

15 Any triangle contains at least ...... acute angles. (0 or 1 or 2 or 3)

16 All the angles of an acute triangle are ....

(acute or obtuse or right or straight)

17 The triangle that has a right angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)

18 A triangle that contains one obtuse angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)

19 The number of edges of a cube is .... (6 or 8 or 12 or 5)

20 The number of faces of a rectangular prism is ....

(6 or 8 or 12 or 5)

21 The number of vertices of a rectangular prism is ....

(6 or 8 or 12 or 5)

22 Each face of the cube is in the form of a ....

(square or rectangle or triangle or circle)

23 A .... is a 3D shape with one vertex and one face in the shape of a circle. (cylinder or sphere or cone or circle)

24 A .... is a 3D shape that has two faces, each in the shape of a circle. (cylinder or sphere or cone or circle)

25 A .... is a 3D shape with 5 faces, one of which is a square and the other faces are in the shape of triangles.

(rectangular prism or cube or square pyramid or cone)

26 The volume of the opposite 3D shape is .... cm^3. (9 or 6 or 13 or 7)

27 The volume of the opposite 3D shape is .... cm^3. (20 or 16 or 12 or 13)

28 When the opposite 3D shape is divided into 4 layers, each layer contains .... cubes.

(32 or 16 or 8 or 4)

29 When the opposite 3D shape is divided into 3 slices, each slice contains .... cubes.

(9 or 21 or 18 or 27)

30 If the volume of a rectangular prism is 60 cm^3, and its base area is 15 cm^2, then its height is .... cm. (4 or 75 or 45 or 900)

Second: Complete the following sentences:

1. The quadrilaterals that contain two pairs of parallel sides are ...., ..., ..., and ....
2. The quadrilaterals that have four sides of equal length are .... and ....
3. The quadrilaterals that have four right angles are .... and ....
4. A parallelogram contains .... of parallel sides, ... of acute angle(s) and .... of obtuse angle(s).
5. A rectangle contains .... of parallel sides and .... right angle(s).
6. A rhombus contains .... of parallel sides, ... of acute angle(s) and .... of obtuse angle(s).
7. A square contains .... of parallel sides and .... of right angle(s).
8. A kite contains .... of congruent adjacent sides.
9. The quadrilateral that has only one pair of parallel sides is a ....
10. The quadrilateral that has two pairs of congruent adjacent sides is a ....
11. The quadrilateral that has two pairs of parallel sides and all of its angles are right angles is a ....
12. The quadrilateral that has two pairs of parallel sides, all its sides are equal and all its angles are right is a ....
13. The quadrilateral that has one pair of acute angles, one pair of obtuse angles, two pairs of parallel sides, and all its sides are equal is a ....
14. The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.
15. The type of triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.

16 The type of triangle whose side lengths are equal according to the lengths of its sides is a/an .... triangle.

17 The type of triangle whose angles are all acute according to the types of its angles is a/an .... triangle.

18 The type of triangle that contains one right angle and two acute angles according to the types of its angles is a/an .... triangle.

19 The type of triangle that contains one obtuse angle and two acute angles according to the types of its angles is a/an .... triangle.

20 Any triangle has at least .... acute angle(s).

21 The type of the equilateral triangle according to the types of its angles is a/an .... triangle.

22 In the ordered pair (6, 5), the x-coordinate is .... and the y-coordinate is ....

23 The ordered pair representing the origin is (.......... , ...).

24 The point of intersection of the x-axis with the y-axis is called ....

25 The vertical number line in the coordinate plane is called ....

26 The horizontal number line in the coordinate plane is called ....

27 To move from point (1,5) to point (1,1), we move .... the y-coordinate .... unit(s).

28 A rectangular prism has 2 vertical slices; each slice has a volume of 4 cm^3, then its volume is .... cm^3.

29 A box is filled by 4 horizontal layers; each layer contains 8 cube units, then its capacity is .... cube units.

30 A cuboid of 5 cm length, 2 m width, and 3 m height has a volume of .... cm^3.

Third: Answer the following:

1 Study the following figures, then complete:

a 1 The corresponding figure is called a ....

2 AB = ..., $\overline{AB}$ // ....

3 AD = ..., $\overline{AD}$ // ....

4 Angles ❶ and ❸ are .... angles.

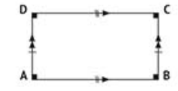
5 Angles ❷ and ❹ are .... angles.

b 1 The corresponding figure is called a ....

2 AB = ..., $\overline{AB}$ // ....

3 AD = ..., $\overline{AD}$ // ....

4 All its angles are .... angles.



c 1 The lengths of the sides are: AB = ... cm, BC = ... cm, and AC = ... cm.

2 The type of the triangle according to the lengths of its sides is

....

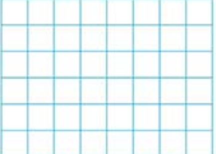
3 The types of the angles:

- ∠ A is a/an .... angle.
- ∠ B is a/an .... angle.
- ∠ C is a/an .... angle.

4 The type of the triangle according to the types of its angles is ....

2 Draw a model for a rectangle measuring $3\frac{1}{2}$ units by 4 units. Then find its area.

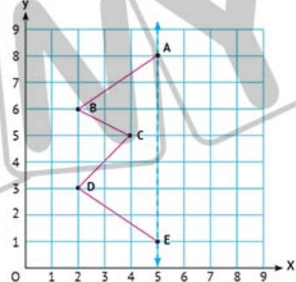
....



3 On the following coordinate plane, plot points F, G, and H to make a figure that is symmetrical along the dotted vertical line drawn on the coordinate plane. Point F should follow point E. Connect point H to point A to close the shape. Then, list the coordinates of F, G, and H.

F (........ , ...),

G (........ , ...), H (........ , ...)



4 Determine the volume of the given compound shape.

....

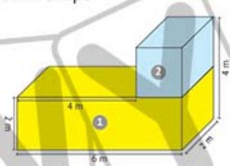
....

....

....

....

....



5 Osman built a planter box for his backyard. The length of the planter box is 150 centimeters. The width is 90 cm, and the height is 120 cm. Osman poured soil into the box up to the 100 cm height line. What is the volume of the planter box? What is the volume of the soil?

....

....

6 Fares built a small planter box for his window. He planned to fill it to the top with 12,000 cubic centimeters of soil. The base of the planter box measures 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?

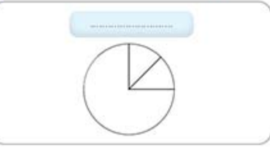
....

....

7 **Look at the following pie chart and answer:**

a Shade $\frac{3}{4}$ of the circle in green, $\frac{1}{8}$ of the circle in blue, and $\frac{1}{8}$ of the circle in red.

b If the pie chart represents 40 pupils:



1 How many pupils does the blue part represent? ....

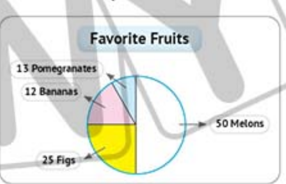
2 How many pupils does the red part represent? ....

c What is the decimal represented by the green color? ....

8 **Analyze the following pie chart and answer the questions below:**

a What fraction represents the number of children who participated in the survey and preferred melons?

....

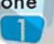


b What fraction represents the number of children who participated in the survey and preferred figs? ....

c How many children participated in the survey? ....

Model Exams

Cairo Gavernorate - Al-Shourq Educational Zone



First: **Choose the correct answer:**

1. $\frac{14}{7}$ is called a/an ....
(proper fraction or improper fraction or mixed number or whole number)

2. $\frac{24}{36}$ = ... (In the simplest form) ($\frac{8}{12}$ or $\frac{6}{9}$ or $\frac{4}{6}$ or $\frac{2}{3}$)

3. $3\frac{4}{5}$ = ... ($\frac{19}{5}$ or $\frac{34}{5}$ or $\frac{12}{5}$ or $\frac{5}{12}$)

4. $3\frac{5}{4}$ = ... ($1\frac{1}{4}$ or $2\frac{9}{4}$ or $3\frac{4}{5}$ or $4\frac{4}{5}$)

5. $3\frac{1}{4}$ + ... = $5\frac{1}{2}$ ($1\frac{1}{2}$ or $2\frac{1}{2}$ or $1\frac{1}{4}$ or $2\frac{1}{4}$)

6. The volume of the opposite shape is ....
(10 or 16 or 12 or 15)

7. A .... is a quadrilateral with two pairs of parallel sides, all of its angles are right, and all of its sides are equal in length.
(rhombus or trapezium or parallelogram or square)

Second: **Complete the following:**

1. $3\frac{....}{4} = 3\frac{4}{8}$

2. $2\frac{1}{2} - 1\frac{7}{8}$ = ... − 2

3. $\frac{3}{6}$ X 4 = ... + ... + ... + ... = ...

4. $\frac{1}{5}$ ÷ .... = $\frac{1}{30}$

5. The .... is the point of intersection of the x-axis and the y-axis in the coordinate plane.

6. A .... is a solid that does not contain faces, edges, or vertices.

7 The type of the triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.

8 The quadrilateral that has only one pair of parallel sides is a ....

Third: Choose the correct answer:

1 A .... is a three-dimensional shape that contains 5 faces, one of which is a square, and the other faces, each is a triangle.

(rectangular prism or cube or square pyramid or cone)

2 The volume of a rectangular prism is 60 cm^3 and its base area is 15 cm^2, then its height is .... cm. (900 or 45 or 75 or 4)

3 The length of a rectangle is 6 cm and its width is $2\frac{1}{4}$ cm, then its area is .... cm^2. ($4\frac{1}{4}$ or $8\frac{1}{4}$ or $12\frac{1}{4}$ or $13\frac{1}{2}$)

4 $\frac{3}{4} \times 6 = \frac{2}{4} \times$ .... (9 or 4 or 3 or 6)

5 $\frac{3}{4} \times \frac{5}{9} = \frac{1}{4} \times \frac{\dots}{\dots}$. ($\frac{5}{9}$ or $\frac{1}{9}$ or $\frac{5}{3}$ or $\frac{15}{36}$)

6 $8 \div 5 =$ .... ($\frac{1}{40}$ or 40 or $1\frac{3}{5}$ or $\frac{5}{8}$)

7 $4 \div$ .... $= 12$ (4 or $\frac{1}{4}$ or $\frac{1}{3}$ or 3)

Fourth: Answer the following:

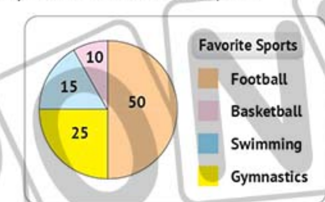
1 Osman expected his homework to take $\frac{4}{5}$ of an hour, but he completed it in $\frac{3}{4}$ of an hour. How much less time did Osman complete his homework than the time he expected?

....

2 Which is larger in volume? A rectangular prism with dimensions of 5 cm, 10 cm, and 4 cm, or a rectangular prism with an area of 60 cm^2 and a third dimension of 7 cm?

....

3 The following pie chart shows the most preferred sport by a number of students. Study the chart and then complete:



a The fraction that represents the number of students who prefer swimming is ....

b The number of students who prefer basketball is more than the number of students who prefer gymnastics by ....

Qalyubiyya Governorate - Toukh Educational Zone

2

First: **Choose the correct answer:**

1 $\frac{1}{5}$ + ... = $\frac{1}{2}$ ($\frac{1}{3}$ or $\frac{2}{7}$ or $\frac{3}{10}$ or $\frac{1}{5}$)

2 $\frac{35}{45}$ = ... (In the simplest form) ($\frac{7}{5}$ or $\frac{5}{7}$ or $\frac{7}{9}$ or $\frac{5}{9}$)

3 $\frac{1}{4}$ of 12 is .... (2 or 6 or 3 or 4)

4 $\frac{15}{4}$ = ... ($4\frac{1}{5}$ or $5\frac{1}{4}$ or $1\frac{11}{4}$ or $1\frac{5}{4}$)

5 $4\frac{8}{9} + \frac{1}{3}$ = ... + $\frac{2}{9}$ ($5\frac{2}{3}$ or 5 or 4 or 3)

6 The .... is a quadrilateral with two pairs of parallel sides, and all of its angles are right. (rectangle or rhombus or trapezoid or parallelogram)

7 A triangle that contains one obtuse angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)

Second: Complete the following:

1 A fraction whose numerator is greater than its denominator is called a/an ....

2 $2\frac{1}{2}$ hours = ... minutes

3 $\frac{3}{8} \times \frac{4}{9} = \frac{1}{\ldots} \times \frac{1}{\ldots}$

4 5 ÷ .... = 15

5 A solid that has only one face in the form of a circle is a ....

6 The volume of the rectangular prism = ... X .... X ....

7 The type of the triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is a/an .... triangle.

8 The quadrilateral with two pairs of adjacent congruent sides is a ....

Third: Choose the correct answer:

1 Point .... is located on the x-axis. ((5 , 1) or (1 , 5) or (5 , 0) or (0 , 5))

2 The cube has .... edges. (5 or 12 or 8 or 6)

3 A rectangular prism whose base area is 15 cm^2 and its height is 6 cm, then its volume is .... cm^3. (180 or 42 or 90 or 21)

4 $1\frac{1}{2}$ times 4 is .... (3 or 6 or $6\frac{1}{2}$ or $5\frac{1}{2}$)

5 .... $\div 5 = \frac{1}{15}$ (3 or 5 or $\frac{1}{3}$ or $\frac{1}{5}$)

6 8 ÷ .... $= 1\frac{1}{3}$ ($\frac{1}{3}$ or 3 or 6 or $\frac{1}{6}$)

7 $6 \times \frac{3}{4} =$ ...... ($2 \times \frac{9}{4}$ or $6 \times \frac{6}{4}$ or $5 \times \frac{4}{3}$ or $4 \times \frac{3}{4}$)

Fourth: Answer the following:

1 Omnia bought $2\frac{5}{8}$ kg of beans, she used $1\frac{3}{4}$ kg of beans to make falafel. How many kilograms of beans are left?

....

2 The distance from Ahmed's house to his school is 4 km. He wants to divide that distance into 8 equal parts. How long is each part?

....

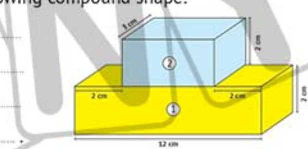
3 Calculate the volume of the following compound shape:

....

....

....

....



4 In the following pie chart, shade $\frac{1}{3}$ of the circle, and leave the rest of the circle white. Then answer:

a The number of shaded parts is ....

b The fraction representing the white (uncolored) part is ....

Alexandria Gavernorate - Montazah Educational Zone

3

First: **Choose the correct answer:**

1 $\frac{1}{4}$ + ... = $\frac{2}{3}$ ($\frac{11}{12}$ or $\frac{3}{7}$ or $\frac{5}{12}$ or $\frac{1}{4}$)

2 15 minutes = ... hours ($\frac{1}{3}$ or $\frac{1}{4}$ or $\frac{1}{2}$ or $\frac{1}{5}$)

3 $\frac{11}{12}$ - $\frac{1}{6}$ = ... ($\frac{3}{4}$ or $\frac{9}{4}$ or $\frac{1}{4}$ or $\frac{3}{12}$)

4 A year and a quarter = ... months (21 or 16 or 15 or 12)

5 A rectangular prism has a volume of 24 cm^3, a length of 4 cm, and a width of 2 cm, so its height is .... cm. (30 or 4 or 3 or 12)

6 Each face of the cube is in the form of a ....

(square or rectangle or triangle or circle)

7 A rhombus contains .... pair(s) of parallel sides. (1 or 2 or 3 or 4)

Second: Complete the following:

1 $\frac{14}{42} =$ .... (In the simplest form)

2 $\frac{6}{7} \times 1\frac{1}{2} = \frac{6}{7} +$ ....

3 $18 \div 8 =$ ....

4 $2\frac{1}{3} \times \frac{1}{4} = (\frac{1}{3} \times$ .... $) + (2 \times$ .... $)$

5 The ordered pair representing the origin is (............ , ...).

6 The solid that has two faces, each in the shape of a circle, is ....

7 Any triangle contains at least .... acute angle(s).

8 A quadrilateral that has two pairs of parallel sides, all its angles are right, and its sides are congruent, is ....

Third: Choose the correct answer:

1 $1\frac{3}{10} + 3\frac{7}{10} =$ .... (7 or 6 or 5 or 4)

2 $3 - 1\frac{1}{2} = 3\frac{1}{2} -$ .... ($\frac{1}{2}$ or 1 or 2 or $2\frac{1}{2}$)

3 $4 \times \frac{1}{3} =$ .... ($4 \div 3$ or $4 \div \frac{1}{3}$ or $\frac{1}{4} \div \frac{1}{3}$ or $\frac{1}{4} \div 3$)

4 $\frac{5}{7} \times 4 = \frac{2}{7} \times$ .... (2 or 5 or 10 or 8)

5 $\frac{4}{15} \times \frac{5}{8} =$ .... $\times \frac{1}{2}$ ($\frac{1}{3}$ or $\frac{3}{4}$ or $\frac{1}{15}$ or $\frac{1}{6}$)

6 If the opposite shape is folded, then the volume of the resulting shape is .... (20 or 38 or 40 or 28)

7 A triangle whose side lengths are 4 cm, 4 cm, and .... cm is an equilateral triangle. (3 or 5 or 7 or 4)

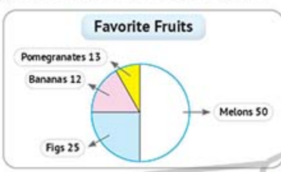
Fourth: **Answer the following:**

1 $\frac{1}{3}$ of the flowers in the school garden are white, $\frac{1}{4}$ are pink, and the rest are blue. What fraction represents the blue flowers?

....

2 Draw a rectangle that is:
4 units long and $2\frac{1}{2}$ units wide.
Then find its area.
Area of the rectangle = ... square units.

3 The following pie chart shows the types of fruits preferred by a number of children . Analyze the chart and then complete:



a The fraction representing the children who preferred melons is ....

b The total number of children who preferred pomegranates or bananas is ....

Alexandria Gavernorate - East Educational Zone 4

First: **Choose the correct answer:**

1 5 = ... $(\frac{15}{3}$ or $\frac{15}{15}$ or $\frac{3}{15}$ or $\frac{15}{5})$

2 .... $- \frac{3}{5} = 1$ $(\frac{5}{5}$ or $\frac{8}{10}$ or $\frac{8}{5}$ or $\frac{4}{5})$

3 $3\frac{12}{11} = 4\frac{....}{....}$ $(\frac{1}{11}$ or $\frac{6}{11}$ or $\frac{5}{11}$ or $\frac{9}{11})$

4 $3\frac{5}{9}$ .... $3\frac{1}{2}$ (< or = or > or ≥)

5 150 minutes = ... hours (3 or $2\frac{1}{2}$ or $2\frac{1}{4}$ or $1\frac{1}{5}$)

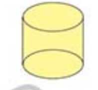
6 When the opposite solid is divided into 3 slices, each slice contains .... cubes. (12 or 18 or 6 or 8)

7 A triangle that contains one right angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)

Second: Complete the following:

1 The type of triangle whose side lengths are equal according to the lengths of its sides is a/an .... triangle.

2 The number of faces in the opposite figure is ...., and the shape of each face is a ....



3 A parking lot is $3\frac{1}{4}$ km long and $1\frac{1}{3}$ km wide, then the area of the parking lot is .... km^2.

4 The quadrilateral that has two pairs of parallel sides, all its sides are equal and its angles are not right angles is a ....

5 $\frac{1}{3}$ of 18 is ....

6 $3\frac{7}{8} + 2\frac{1}{2} =$ .... $+ 2\frac{3}{8}$

7 $\frac{3}{10} \times \frac{5}{12} = \frac{1}{2} \times$ ....

8 $8 \div$ .... $= 16$

Third: Choose the correct answer:

1 $\frac{5}{6} \times$ .... $= 10$ (5 or 12 or 6 or 2)

2 $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} =$ .... ($\frac{2}{5}$ or $\frac{6}{15}$ or $\frac{2}{5} \times 3$ or $\frac{2}{5} + 3$)

3 $5 \div 2 =$ .... (10 or $\frac{1}{10}$ or $2\frac{1}{2}$ or $\frac{2}{5}$)

4 $4 \times \frac{1}{8} =$ .... ($\frac{1}{4} \div 8$ or $4 \div \frac{1}{8}$ or $\frac{1}{4} \div 8$ or $4 \div 8$)

5 A rectangular prism whose length is 5 cm, its width is 2 cm, and its height is 3 cm, its volume is .... cm^3. (60 or 25 or 10 or 30)

6 In the ordered pair (7, 2), the x-coordinate is .... (14 or 9 or 7 or 2)

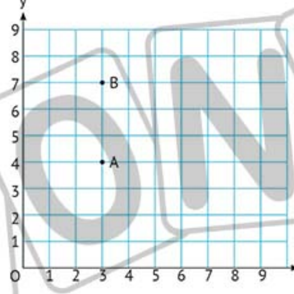
7 The area of a rectangle whose dimensions are $2\frac{1}{4}$ m and $2\frac{2}{3}$ m, is .... m^2. ($4\frac{2}{12}$ or 6 or $\frac{1}{6}$ or 36)

Fourth: Answer the following:

1 Dalia has an agricultural land of $2\frac{1}{2}$ square metres, and has enough basil seeds for $2\frac{3}{10}$ square metres. How much land is left uncultivated?

....

2 Use the following coordinate grid to complete:



Draw a line connecting the two points. Then, place point C to create an isosceles right triangle with the right angle at point A.

C (........ , ...)

Alexandria Gavernorate - Downtown Educational Zone

5

First: Choose the correct answer:

1. $5\frac{5}{7} =$ .... ($4\frac{6}{7}$ or $4\frac{10}{7}$ or $4\frac{12}{7}$ or $4\frac{1}{7}$)
2. The smallest like denominator for $\frac{5}{8}$ and $\frac{2}{6}$ is ....(12 or 24 or 36 or 48)
3. $4 \div 20 =$ .... ($\frac{4}{5}$ or $\frac{1}{5}$ or $\frac{1}{2}$ or $\frac{1}{4}$)
4. The estimate of $3\frac{4}{5} - 2\frac{1}{9}$ is .... (2 or 0 or 1 or 5)
5. $7\frac{1}{6} -$ .... $= 2\frac{1}{2}$ ($4\frac{4}{6}$ or $5\frac{4}{6}$ or $5\frac{2}{6}$ or $4\frac{2}{6}$)
6. The area of the rectangle = ...
   (Length X Width or Length + Width or Length + Width X 2 or Length X Width X 2)
7. A triangle whose side lengths are 4 cm, 4 cm, and .... cm is an equilateral triangle. (4 or 7 or 5 or 3)

Second: Complete the following:

1. $\frac{3}{8} +$ .... $= \frac{1}{2}$
2. $4\frac{1}{3} + 2\frac{5}{6} = 4\frac{1}{6} +$ ....
3. $\frac{4}{5} \times$ .... $= \frac{4}{5} + \frac{4}{5} + \frac{4}{5} + \frac{4}{5} + \frac{4}{5}$
4. The division problem representing the corresponding form is ....

$\frac{1}{2}$			$\frac{1}{2}$		
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

5. The number of edges in the opposite shape is ...., and the number of vertices is ....

6. The mosque has a window that is 2 meters wide and $2\frac{1}{2}$ meters long. The window area is .... m^2.
7. .... is the amount of space occupied by a solid.
8. The quadrilateral that has one pair of acute angles, one obtuse angle, two pairs of parallel sides, and all its sides equal is a ....

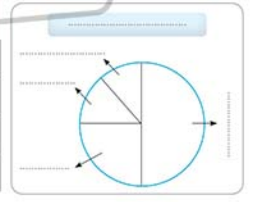
Third: **Choose the correct answer:**

1. $10 \times$ .... $= 6 \times \frac{5}{7}$ ($\frac{5}{6}$ or $\frac{3}{5}$ or $\frac{3}{7}$ or 3)
2. $\frac{3}{4} \times$ .... $= \frac{3}{8}$ ($\frac{2}{2}$ or $1\frac{1}{2}$ or $\frac{1}{4}$ or $\frac{1}{2}$)
3. $3 \div$ .... $= 6$ ($\frac{1}{3}$ or $\frac{1}{6}$ or $\frac{1}{2}$ or 2)
4. .... $\div 2 = 8$ ($\frac{1}{16}$ or $\frac{1}{2}$ or 2 or 16)
5. The vertical number line in the coordinate plane is called the ....
   (x-axis or y-axis or origin or ordered pair)
6. A rectangle whose dimensions are $4\frac{4}{5}$ m and $2\frac{1}{2}$ m, its area is .... m^2.
   (9 or $8\frac{5}{7}$ or $8\frac{4}{10}$ or 12)
7. A triangle that contains one right angle and two acute angles is called a/an .... triangle. (acute or obtuse or right or equilateral)

Fourth: **Answer the following:**

1. Wael collected $4\frac{1}{4}$ kg of dates, he gave $2\frac{3}{5}$ kg to his friend.
   How many kilograms are left with Wael? ....
2. Rami wanted to build a new hut. He had a place outside his house measuring 4 m of length by 3 m of width, and he needed the volume of the new hut to be 72 m^3. How high should the hut be? ....
3. The following frequency table shows the favorite ice cream flavor for a group of 50 children. Complete the pie chart and the table shown.

Flavor	Frequency	Decimal
a Mango	16	....
b Vanilla	8	....
c Mastic	4	....
d Chocolate	4	....



Giza Governorate - El Ayyat Educational Zone

6

First: Choose the correct answer:

1. $3\frac{7}{5}$ is called a/an ....

   (proper fraction or improper fraction or whole number or mixed number)

2. $\frac{15}{45}$ = ... (In the simplest form) $(\frac{30}{90}$ or $\frac{1}{3}$ or $\frac{1}{4}$ or $\frac{3}{9})$

3. $1\frac{9}{2}$ = ... $(5\frac{1}{2}$ or $4\frac{5}{2}$ or $3\frac{7}{2}$ or $2\frac{11}{2})$

4. $\frac{6}{5} \times 4 = \frac{3}{5} \times$ .... (4 or 8 or 6 or 3)

5. $3 \div 9$ = ... $(9$ or $\frac{1}{9}$ or $\frac{1}{3}$ or $3)$

6. $\frac{5}{6} \times \frac{3}{2}$ ☐ $\frac{5}{6}$. $(<$ or $=$ or $>$ or $\leq)$

7. $2\frac{1}{3}$ + ... $= 4\frac{1}{2}$ $(2\frac{3}{6}$ or $2\frac{1}{6}$ or $2\frac{2}{3}$ or $2\frac{1}{3})$

Second: Complete the following:

1. $8\frac{15}{30} = 8\frac{1}{....}$

2. $6\frac{1}{4}$ – .... $= 3\frac{1}{2}$

3. $\frac{3}{4} + \frac{3}{4} + \frac{3}{4}$ = ... X ....

4. .... $\div 5 = 3 \times \frac{1}{5}$

5. A rectangular prism has a volume of 240 cm^3 and its base area is 80 cm^2, so its height is .... cm.

6. The type of equilateral triangle according to the types of its angles is a/an .... triangle.

7. A trench is in the shape of a rectangle. If the length of the trench is 8 m and the width is $1\frac{1}{4}$ m, then the area of the trench is .... m^2.

8. A kite has .... of congruent adjacent sides.

Third: Choose the correct answer:

1. $3\frac{2}{7}$ = ... ($\frac{12}{7}$ or $\frac{23}{7}$ or $\frac{6}{7}$ or $\frac{5}{7}$)
2. $\frac{1}{3}$ ÷ .... = 2 ($\frac{1}{6}$ or 6 or 3 or $\frac{1}{3}$)
3. .... is the amount of liquid a container can hold.
   (Area or Perimeter or Volume or Capacity)
4. A .... is a quadrilateral with two pairs of parallel sides, one pair of acute angles, and a pair of obtuse angles.
   (square or rectangle or trapezium or parallelogram)
5. The number of edges of the cube is .... (6 or 8 or 12 or 5)
6. The horizontal number line in the coordinate plane is called the ....
   (x-axis or y-axis or origin or ordered pair)
7. Any triangle contains at least .... acute angle(s). (0 or 1 or 2 or 3)

Fourth: Answer the following:

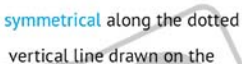
1. A car for transporting building materials has a box in the shape of a rectangular prism with a length of 5 m, a width of 2 m, and a height of 3 m. The sand has been placed to a height of 2 m. What is the volume of the empty part of the box?

   ....

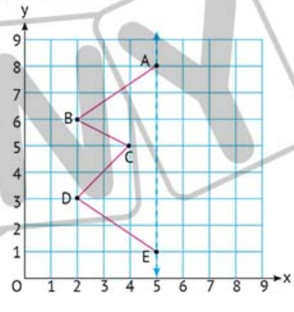
2. Rania spends $\frac{3}{4}$ of her monthly salary on food, rent, utilities, and transportation. After these expenses, she is left with 1,250 pounds. What is Rania's monthly salary?

   ....

3 On the following coordinate plane, plot points F, G, and H to make a figure that is symmetrical along the dotted vertical line drawn on the coordinate plane.



Point F should follow point E. Connect point H to point A to close the shape. Then list the coordinates of F, G, and H.



F (......, ...), G (......, ...), H (......, ...)

Qalyubiyya Governorate - Banha Educational Zone

7

First: **Choose the correct answer:**

1. $\frac{1}{6}$ + ... = $\frac{1}{3}$ ($\frac{1}{18}$ or $\frac{1}{3}$ or $\frac{1}{6}$ or $\frac{1}{9}$)
2. $\frac{24}{36}$ = ... (In the simplest form) ($\frac{1}{2}$ or $\frac{6}{18}$ or $\frac{2}{3}$ or $\frac{3}{4}$)
3. .... ÷ 3 = $\frac{1}{9}$ ($\frac{1}{9}$ or 9 or $\frac{1}{3}$ or 3)
4. $\frac{1}{3}$ of 48 is .... (12 or 24 or 16 or 51)
5. $\frac{3}{8} \times \frac{2}{9}$ = ... ($\frac{1}{4} \times \frac{1}{3}$ or $\frac{3}{4} \times \frac{1}{2}$ or $\frac{1}{2} \times \frac{2}{3}$ or $\frac{1}{8} \times \frac{1}{9}$)
6. $\frac{42}{8}$ = ... ($5\frac{1}{3}$ or $5\frac{1}{4}$ or $5\frac{1}{2}$ or $5\frac{1}{8}$)
7. 9 ÷ .... = $1\frac{1}{2}$ (2 or $\frac{1}{2}$ or 6 or $\frac{1}{6}$)

Second: Complete the following:

1. 15 months = ... years
2. $\frac{5}{9} \times \frac{3}{10} = \frac{1}{\cdots} \times \frac{1}{\cdots}$
3. 9 ÷ .... = 18
4. $5\frac{1}{4} = \frac{\cdots}{4}$
5. A garden with a length of 10 units and a width of $2\frac{1}{4}$ units, then the area of the garden = ... square units.
6. A rectangular prism whose base area is 15 cm^2 and its height is 6 cm, so its volume is .... cm^3.
7. A .... is a quadrilateral that contains two pairs of parallel sides, all its sides are equal, and its angles are right.
8. A .... is a solid containing only one face in the form of a circle.

Third: Choose the correct answer:

1. $5\frac{5}{6} + \frac{2}{3} = 6 +$ .... ($\frac{5}{6}$ or $\frac{2}{3}$ or $\frac{1}{2}$ or $\frac{1}{3}$)
2. $1\frac{1}{2} \times \frac{4}{5} =$ .... ($\frac{4}{5} + \frac{2}{5}$ or $\frac{4}{5} + \frac{4}{5}$ or $\frac{4}{5} + \frac{1}{2}$ or $1 + \frac{2}{5}$)
3. A triangle that contains one right angle and two acute angles is called a/an .... triangle. (acute or right or equilateral or obtuse)
4. The .... is the point of intersection of the x-axis with the y-axis. (origin or starting point or ending point or ordered pair)
5. A rectangular prism is a three-dimensional shape that has .... faces. (12 or 8 or 6 or 9)
6. A triangle whose side lengths are 7 cm, 4 cm, and .... cm is an isosceles triangle. (11 or 3 or 7 or 5)
7. Each face of the cube is in the form of a .... (square or rectangle or triangle or circle)

Fourth: Answer the following:

1 Find the result. Put your answer in the simplest form, if possible:

a $3\frac{1}{8} + 1\frac{5}{6} =$ ....

b $4\frac{2}{5} - 2\frac{1}{2} =$ ....

2 Afaf spent $3\frac{1}{2}$ hours studying. The next day, she spent $1\frac{1}{2}$ fewer hours than the previous day. How many hours did Afaf spend studying on both days?

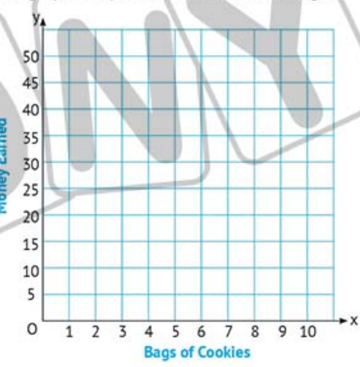
....

3 Faris made a little plant box for the window. He planned to fill it to the top with 12,000 cubic centimetres of soil. The base of the plant box measures 40 cm long and 15 cm wide. How high must the box be to hold all the soil?

....

4 Ola is selling bags of cookies in her neighbourhood to make extra money to buy a new bike. She earns 5 LE for each bag of cookies she sells. Complete the table, and then graph the points on the coordinate grid.

Bags of Cookies, x	Money Earned LE, y
2	
4	
7	
8	
10	



Monufia Governorate - Quesna Educational Zone

8

First: **Choose the correct answer:**

1. .... $- \frac{1}{3} = \frac{1}{4}$ $(\frac{7}{12}$ or $\frac{7}{7}$ or $\frac{2}{7}$ or $\frac{1}{2})$
2. $4 \times \frac{1}{5} =$ .... $(4 \div 5$ or $4 \times \frac{1}{5}$ or $\frac{1}{4} \div 5$ or $\frac{1}{4} \div \frac{1}{5})$
3. $1 \frac{1}{3}$ hour = ... minutes (90 or 80 or 20 or 60)
4. $\frac{3}{8} \times 6 = \frac{2}{8} \times$ .... (3 or 6 or 9 or 18)
5. $\frac{1}{3} +$ .... $= \frac{1}{2}$ $(\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{6}$ or $\frac{1}{4})$
6. $\frac{5}{18} \times \frac{8}{15} = \frac{1}{9} \times$ .... $(\frac{4}{3}$ or $\frac{4}{9}$ or 4 or $\frac{1}{3})$
7. $5 \frac{3}{10} - 2 \frac{4}{5} = 5 \frac{1}{2} -$ .... $(3 \frac{1}{5}$ or 3 or $2 \frac{1}{2}$ or $2)$

Second: **Complete the following:**

1. $\frac{48}{40} =$ .... $\frac{\dots}{\dots}$ (In the simplest form)
2. $\frac{8}{9} \times 1 \frac{1}{2} = \frac{8}{9} +$ ....
3. $12 \div 9 =$ ....
4. $\frac{2}{3} \times \frac{3}{2} =$ ....
5. If a rectangle has a length of 2 m and its area is $\frac{1}{2}$ m^2, its width is .... m.
6. A rectangular prism with a length of 7 cm, a width of 5 cm, and a height of 2 cm, then its volume is .... cm^3.
7. When the opposite 3D shape is divided into 3 slices, each slice contains .... cube(s).

8. In the ordered pair (3, 5), the x-coordinate is ....

Third: **Choose the correct answer:**

1. A year and 4 months = ... years $(1 \frac{2}{3}$ or $1 \frac{1}{4}$ or $1 \frac{1}{3}$ or $1 \frac{1}{2})$

2 $9 - 1\frac{1}{2}$ .... ($8\frac{1}{2}$ or 8 or $7\frac{1}{2}$ or 7)

3 A rectangular prism has length = width = height, and its volume is 8 cm^3, so its length is .... cm. (2 or 4 or 24 or 512)

4 The number of edges of a rectangular prism is .... (6 or 8 or 12 or 5)

5 The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides, is a/an .... triangle.

(equilateral or scalene or isosceles or acute)

6 The number of lines of symmetry in a rectangle is .... line(s).

(0 or 1 or 2 or 4)

7 The .... is a quadrilateral with two pairs of congruent adjacent sides, two acute angles and two obtuse angles.

(rectangle or rhombus or trapezium or kite)

Fourth: **Answer the following:**

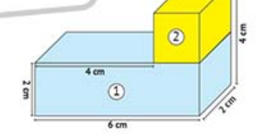
1 Find the result. Put your answers in the simplest form, if possible:

a $4\frac{3}{8} + 1\frac{2}{3} =$ ....

b $7\frac{1}{3} - 2\frac{3}{4} =$ ....

2 The teacher has 4 boxes of pencils, the teacher wants to give each student $\frac{1}{3}$ box of pencils. How many pupils will the teacher give pencils to? ....

3 Calculate the volume of the opposite shape:



a The volume of rectangular prism (1):

....

b The volume of rectangular prism (2):

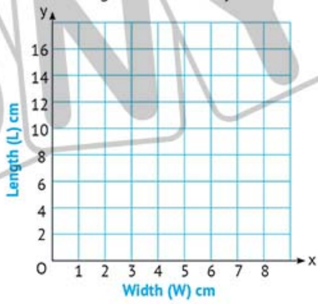
....

c The volume of shape:

....

4 A rectangle whose length is twice its width, use the pattern to complete the following table, and then represent the data on the coordinate grid.
Draw a line to connect the points.
Use the width data as the x-axis and the length data as the y-axis.

Width (cm) W	Length (cm) $L = 2 \times W$
1	2
2	4
....	8
5	....
....	12
8	....



Al Sharqiya Governorate - Faqous Educational Zone

9

First: **Choose the correct answer:**

1. $\frac{45}{15}$ = ... (In the simplest form) (4 or 3 or $\frac{15}{5}$ or $\frac{9}{3}$)
2. $\frac{3}{4}$ X .... = 9 (12 or 8 or 6 or 3)
3. 1 – .... = $\frac{4}{7}$ ($1\frac{3}{4}$ or $1\frac{4}{7}$ or $\frac{3}{7}$ or $\frac{4}{7}$)
4. $\frac{6}{8} + \frac{3}{8}$ is .... X .... ($\frac{6}{8} \times \frac{3}{8}$ or $\frac{6}{8} \times \frac{1}{2}$ or $\frac{6}{8} \times 2$ or $\frac{6}{8} \times 1\frac{1}{2}$)
5. $4\frac{7}{15}$ ☐ $4\frac{1}{2}$ (< or = or > or ≤)
6. 7 ÷ 3 = ... ($7\frac{1}{3}$ or $3\frac{1}{2}$ or $2\frac{1}{3}$ or $\frac{3}{7}$)
7. $2\frac{1}{4}$ hours = ... minutes (140 or 135 or 150 or 225)

Second: Complete the following:

1. $\frac{1}{4} \times$ .... $= 5$
2. .... $+ 2\frac{2}{5} = 6 + 2\frac{1}{5}$
3. $\frac{1}{3} \div 4 =$ ....
4. $2\frac{5}{8} \times \frac{1}{3} =$ ....
5. .... is the amount of space occupied by a three-dimensional shape.
6. Origin is the point of intersection of .... and ....
7. A rectangle whose dimensions are $3\frac{1}{3}$ m and $2\frac{2}{5}$ m, then its area is .... m^2.
8. A cube is a solid that has .... faces and each face is a ....

Third: Choose the correct answer:

1. $\frac{2}{3} \times \frac{3}{8} =$ .... ($\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{4}$ or $\frac{5}{11}$)
2. $5 \times \frac{1}{4} =$ .... ($5 \div \frac{1}{4}$ or $5 \div 4$ or $\frac{1}{5} \div \frac{1}{4}$ or $\frac{1}{5} \div 4$)
3. A rectangle whose width is $\frac{1}{3}$ m and its area is 2 m^2, so its length is .... meters. (6 or $\frac{1}{6}$ or $\frac{2}{3}$ or $\frac{3}{2}$)
4. The opposite 3D shape consists of .... cubes. (10 or 8 or 16 or 12)

5. If the volume of a rectangular prism is 60 cm^3 and its base area is 15 cm^2, then its height is .... cm. (900 or 45 or 75 or 4)
6. The type of triangle that contains one obtuse angle and two acute angles according to the types of its angles is .... (acute or obtuse or right or isosceles)
7. The .... is a quadrilateral with two pairs of parallel sides, and all of its sides are of equal length. (rhombus or trapezium or parallelogram or rectangle)

Fourth: **Answer the following:**

1. Muhannad has 20 pieces of wood, each in the form of a box of equal dimensions (cube) of 2 cm in length. What is the volume of these pieces combined? ....
2. Nihal has 9 friends. She made 3 pizza pies for her friends and she wants to divide these pies equally among them. What is the share of each of them in pies? ....
3. Ola and Omnia were planting flowers in their garden. Ola had 2 bags of flower seeds, but Omnia had only $1\frac{1}{2}$ of a bag of seeds. Each girl planted $\frac{1}{2}$ of the seeds she had. How many bags of seeds did they plant altogether? ....

Al Gharbia Governorate - East Educational Zone

10

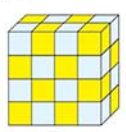
First: **Choose the correct answer:**

1. $\frac{6}{9}$ + ... = 1 ($\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{9}$ or $\frac{3}{3}$)
2. The smallest like denominator of $\frac{5}{6}$ and $\frac{5}{9}$ is .... (36 or 18 or 3 or 54)
3. $\frac{1}{2}$ X .... = $\frac{3}{8}$ ($\frac{1}{4}$ or $\frac{3}{8}$ or $\frac{3}{6}$ or $\frac{3}{4}$)
4. 6 ÷ 30 = ... ($\frac{1}{5}$ or $\frac{1}{4}$ or $\frac{1}{3}$ or $\frac{1}{2}$)
5. 4 ÷ .... = 8 (4 or 2 or $\frac{1}{4}$ or $\frac{1}{2}$)
6. $4\frac{5}{6}$ + ... = $6\frac{1}{2}$ ($1\frac{2}{3}$ or $2\frac{2}{3}$ or $1\frac{1}{6}$ or $2\frac{1}{6}$)
7. .... X $\frac{4}{9}$ = 8 X $\frac{5}{9}$ ($\frac{10}{9}$ or 9 or 10 or 8)

Second: Complete the following:

1. $3\frac{2}{3} - 1\frac{5}{6} = 3\frac{5}{6} -$ ....
2. $\frac{6}{7} \times$ .... $= \frac{6}{7} + \frac{6}{7}$
3. $\frac{9}{10} -$ .... $= \frac{1}{2}$
4. $3\frac{1}{4} \times 8 = \frac{13}{4} \times$ ....
5. Area of the rectangle = ... X ....
6. A rectangular prism has a volume of 36 m^3, a length of 6 m and a width of 3 m. Its height is .... m.
7. The quadrilaterals that have four sides of equal length are:

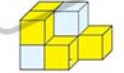
   .... , ...



8. When the opposite 3D shape is divided into 4 layers, each layer contains .... cube(s).

Third: Choose the correct answer:

1. .... $- 3\frac{1}{3} = 2\frac{1}{2}$ ($5\frac{5}{6}$ or $5\frac{2}{5}$ or $6\frac{2}{3}$ or $5\frac{2}{3}$)
2. $\frac{1}{3} \div$ .... $= \frac{1}{12}$ (9 or $\frac{1}{9}$ or 4 or $\frac{1}{4}$)
3. A triangle whose side lengths are 4 cm, 4 cm, and .... cm is an equilateral triangle. (3 or 5 or 7 or 4)



4. The volume of the opposite three-dimensional shape is .... cm^3. (8 or 6 or 15 or 7)
5. A .... is a solid that has no faces, edges, or vertices. (cone or sphere or cylinder or square pyramid)
6. The point .... lies on the y-axis. ((8 , 0) or (0, 8) or (1, 8) or (8, 1))
7. A .... is a quadrilateral shape that has four sides and all its angles are right. (rectangle or rhombus or parallelogram or trapezium)

Fourth: Answer the following:

1. Write the multiplication problem expressed in the opposite model, then find the product:

   .... X .... = ...

2. Two boxes of equal volume, the first box has dimensions of 8 cm, 6 cm, and 3 cm, and the other box has a base area of 16 cm^2.

   Find the height of the other box.

   ....

3. Nabil and Osman are in a 5-hour bike race. Nabil is traveling at a rate of 30 kilometres per hour. Osman is traveling at a rate of 60 km/hr. Use that information to complete the tables below.

Nabil (30 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)	....	....	....	....	....

Osman (60 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)	....	....	....	....	....

- Graph the data from your table on the coordinate plane. Use a different color to represent each biker's data. Remember to label the x-axis and the y-axis and determine the scale for each axis.